THE IMAGINAL PROCESSES OF COLLEGE STUDENTS REPORTING DIFFERENT JUNGIAN PERSONALITY TYPES

By

JEANNE KIENZLE

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TABLE OF CONTENTS

APPENDICES

Abstract of Dissertation Presented to the Graduate School of the University of Florida in Partial Fulfillment of the Requirements for the Degree of Doctor of Philosophy

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Jeanne Kienzle

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This study clarified a part of the stream of consciousness by investigating whether college students classified as differing Jungian personality types responded in significantly different ways to a questionnaire about fantasy and related private mentation. The theories of Carl Jung, Jerome Singer, and Eric Klinger formed the basis of this research. Information provided by this study was intended to increase the understanding of the role of the imagination in personality development for counselors who use imaginal methods in their work.

Subjects were 695 college students, 305 males and 390 females, from university residence halls and community college classes. Their ages ranged from 17 to 27 years. The students responded to the Myers-Briggs Type Indicator (MBTI), which measures Jungian personality types, and the Short

Imaginal Processes Inventory (SIPI), which measures styles of daydreaming.

Scores on the two inventories were examined in two ways. The three SIPI styles of daydreaming--positive-constructive (positive), guilty-dysphoric (negative), and poor attentional control (distractibility)--and then, the 45 SIPI items, were investigated for relationships to MBTI types and single preferences. Analyses of variance, t-tests, chi square comparisons, and Pearson correlations were conducted in the course of testing eight hypotheses concerned with differences in fantasy life by Jungian type.

The 16 MBTI types differed on styles of positive fantasy and distractibility. The MBTI preferences of extraversion, intuition, and perception were associated with positive fantasy. Introversion, feeling, and perception were associated with distractibility. There was no relationship of negative fantasy to MBTI type. These results were consistent with Jungian type theory. Many associations of MBTI types and preferences were found for endorsers and nonendorsers of the 45 SIPI items. Results for each item were provided in the research report.

There were differences between males and females on the results of all data analyses. This finding pointed out the necessity of investigating cognitive style variables--such as those measured by the MBTI and the SIPI in this study--for differences by sex.

CHAPTER ONE
INTRODUCTION

> It is that our normal waking consciousness, rational consciousness as we call it, is but one special type of consciousness, whilst all about it, parted from it by the flimsiest of screens, there lie potential forms of consciousness entirely different. We may go through life without suspecting their existence; but apply the requisite stimulus and at a touch they are there in all their completeness, definite types of mentality which probably somewhere have their field of application and adaption. No account of the universe in its totality can be final which leaves these other forms of consciousness quite disregarded. How to regard them is the question--for they are so discontinuous with ordinary consciousness. They may determine attitudes though they cannot furnish formulas, and open a region though they fail to give a map. At any rate they forbid our premature closing of accounts with reality. (James, 1963, p. 388)

Philosophers always have been fascinated by the realm of inner experiencing which William James called the stream of consciousness. Nevertheless, American psychologists have accepted this domain as a legitimate subject of research for the past two and a half decades only.

In contrast to James, the more modern empiricist Huba (1980) has provided a summary of the multivariate components of the stream of consciousness:

> A necessary list to characterize the inner life of an individual would appear to be: (1) predisposing tendencies conducive to a structured inner

> experience such as visual imagery, imagery in other modes (auditory, olfactory, and so on), control over imagery, and abilities such as spacial manipulation and verbal reproduction; (2) the individual's typical style of thinking be it impulsive or controlled, preanalytical or analytical, simple or elaborate; (3) the content of spontaneous thought, on the average, in the major categories of self-oriented, other-oriented, or inanimate object oriented; (4) the extent to which the inner life usually has content that is likely or unlikely to happen; and (5) the emotional states manifested in the spontaneous thought, the emotions caused by various thoughts and their strength, the emotional context of the spontaneous thought, and whether or not various inner experiences are generated to cope with various emotional states. (p. 632)

The stream of consciousness, therefore, includes such diverse elements as memories, interior monologues, imagery, fantastic imaginings, and sudden, emotionally toned moods.

Both James and Huba were interested in individual differences in the imagination. But of all personality theorists, the Swiss psychiatrist Carl Jung (1921/1971) elaborated the most comprehensive theories of both personality style and the role of the imagination in human development. The central idea which underlies the present study is Jung's belief that the active forces of the imagination inspire the creative unfolding of the self.

The Myers-Briggs Type Indicator, one of the instruments used in this study, was developed from Jung's theory of personality. The other instrument used in the study, a daydream questionnaire developed by Huba (1980) and

colleagues, is compatible theoretically with Jung's ideas about fantasy.

The present study attempted to clarify a part of the stream of consciousness by examining the relationships between Jungian personality types and imaginal processes.

Statement of the Problem

The relevance of fantasy activity to personal development has been until recently a disregarded research topic. Although there has been a growing acceptance towards the idea of a stream of consciousness, most research until now has focused upon imaginal processes considered pathological, such as hallucinations (Holt, 1964). Little is understood about the ongoing mentation of normal people. Even less is known about how normal individuals of differing cognitive styles attend to, label, or evaluate their own private mental events. This study focused upon one aspect of the problem of clarifying the stream of consciousness. Specifically, it addressed the problem of how personality type may be related to fantasy activity.

Need for the Study

A better knowledge of individual differences in imaginative capacities is needed to improve all forms of counseling and psychotherapy. Nearly all therapies today must confront, directly or indirectly, the fantasies of the

client. One daydream of the client may provide the key to an entire belief system or complex which is hindering personal growth. When the client is verbally blocked, or when words seem to get in the way of the therapeutic process, imagery may facilitate the path to healing.

Humanistic therapists often make use of imaginative techniques. However, they may be applying these techniques inappropriately because they lack informed judgments about the individual differences of their clients. Entire therapeutic methods, such as Leuner's (1969) guided affective imagery, could be applied with greater foresight if therapists knew more about how individual personality differences were related to the fantasy lives of their clients. Therapists could improve their empathic capacities, their ability to set goals with the client, their diagnostic skills, and their selection of imagery techniques, if they had an empirical rather than speculative basis for their hunches about the relationship of personality and fantasy.

Until now the effects of imaginative methods of psychotherapy upon differing personality types have not been well understood. For example, a client with a practical, impersonal approach to problem solving may profit from an introduction to guided imagery oriented toward sensory detail and emotion. However, there is no research to support this type of speculation.

Some people may be more impressed or influenced by imaginative material, such as dreams, than others. More important, an active fantasy life may facilitate creativity in some individuals, whereas it may be irrelevant or possibly harmful for others. There is a need for research to address these questions, too.

A description of the relationship of personality to fantasy in the present study is important to form a basis for further research questions, all with the goal of improving the counseling process.

Purpose of the Study

As the empirical study of fantasy is in the preliminary stages, the purpose of this investigation was to provide a basic level of information about the relationship of personality to fantasy. First, the study clarified what relationships may exist between personality type and imaginative processes. Second, when such relationships were found, they were described. Finally, the study examined which types of persons respond in characteristic ways to particular questions about their imaginal processes.

Specifically, this research compared persons of differing Jungian personality type, as measured by the Myers-Briggs Type Indicator (MBTI), in their responses

to a questionnaire, the Short Imaginal Processes Inventory (SIPI), about daydreaming and related mental activities.

Research Questions

The broad research questions were designated as follows:

1) Do persons representing the 16 different composite types from the Myers-Briggs Type Indicator (a test of Jungian types) differ significantly on the 3 daydreaming style mean scores yielded by reports on the Short Imaginal Processes Inventory (a questionnaire on fantasy activity)?

2) Do persons representing each choice between the four pairs of dichotomous preferences on the MBTI differ significantly on the three SIPI daydreaming style mean scores?

3) Are MBTI preference scores correlated significantly with SIPI scores?

4) Are there differing patterns between males and females in the way their SIPI daydreaming style scores are related to MBTI composite types and preferences?

5) Are there significant differences in the way persons representing the different MBTI composite types respond to each item on the SIPI?

6) Are there significant differences in the way persons representing different MBTI preferences respond to each item on the SIPI?

7) Are MBTI preference scores correlated significantly with SIPI item responses?

8) Are there differing patterns between males and females in the way their responses to the SIPI items are related to MBTI composite types and preferences?

Definition of Terms

Daydreaming or fantasy includes any mental activity which is not goal-oriented. A more elaborate definition is provided by Singer and Antrobus (1963), that daydreaming is

> a reported train of thought, imagery, or interior monologue that may occur as a shift of attention away from an ongoing task or the external perceptional situation. The daydreaming may be relatively organized or kaleidoscopic, it may involve clearly wishful pictures or imagery of frightening possibilities, it may involve relatively practical or realistic sequences of events or grossly impossible occurrences. (p. 188)

Further refinements of the definitions of daydreaming and fantasy are available in the second chapter. For practical purposes, daydreaming and fantasy are used as interchangeable terms.

Daydreaming or fantasy is defined operationally in this investigation as responses to a questionnaire, the Short Imaginal Processes Inventory (SIPI). The SIPI yields three major scores representing some commonly found dimensions of daydreaming.

A Jungian personality type refers to a particular description of a comprehensive picture of the attitudes and functions of the personality in the context of the individuation process of the psyche. Specific definitions of type, according to the theory of Carl Jung, are provided in the second chapter.

A Jungian personality type may be referred to as a cognitive style. Type and subtype are defined operationally in this study as responses to a questionnaire, the Myers-Briggs Type Indicator (MBTI), which yields 16 types, each comprised of scores on 4 bipolar dimensions.

Organization of the Study

Prefacing the review of literature relevant to imaginal processes and personality type, a series of definitions of fantasy and daydreaming are formulated. The theoretical context of each definition is provided in order to clarify its meaning.

In the second chapter, the literature review, the special difficulties posed by the investigation of mental imagery, plus an account of the decline and resurgence of interest in the imagination in America, are jointly discussed.

After the current status of research has been clarified, three of the major dichotomies relating personality to imaginal processes--verbalizer versus

visualizer types, right-brained versus left-brained types, and field-dependent versus field-independent types--are presented in detail. These dichotomies are important influences upon the imagination which supplement the cognitive style variables described by Jung.

According to Jung (1921/1971), the imagination is central to the individuation process, and the individuation of the self depends upon the continual emergence of creative approaches to life tasks. Therefore, in the next section of the literature review, a brief summary of creativity research is presented in order to emphasize the close relatedness among individual differences, imaginal processes, and creative personality development.

A description of the development of the test instruments, the SIPI and the MBTI, is provided in the final section of the second chapter. The SIPI is characterized with more historical detail than the MBTI because it is a relatively less known test.

In the third chapter, the research questions are stated again in detail. Thereafter, an account of the methodology of the study, including a description of subjects, administration of inventories, instrumentation, data collection methods, and data analysis procedures, is provided.

In the fourth chapter the results of comparing the two inventories are presented. A fifth chapter with discussion

of results and implications for further research concludes the dissertation.

CHAPTER TWO
REVIEW OF RELATED LITERATURE

Theories of Fantasy and Daydreaming

> All men dream . . . but not equally. They who dream by night in the dusty recesses of their minds wake in the day to find that it is vanity; but the dreamers of the day are dangerous men, for they act their dream with open eyes, to make it possible.
>
> (T. E. Lawrence, quoted in Bolles, 1983, p. 308)

Depending upon how they define daydreaming, different theorists have sought to answer the question of why people daydream. In this study the points of view of four important thinkers are examined with respect to their theories of daydreaming and fantasy.

In everyday language, the terms daydreaming and fantasy often are used interchangeably. The subjects who fill out questionnaires about private mental activities probably do not distinguish their daydreams from their fantasies but would agree that both of these processes feel different to them from other kinds of mental work, such as making a decision.

Daydreams may be considered as thought sequences with more structure and more likelihood of occurring in real life than fantasies. Fantasies may be considered as less

structured and less realistic than daydreams (Huba, 1980). However, there are many examples in history to show that some ideas once regarded as farfetched fantasies actually resulted in realistic productions, such as the invention of the airplane. Therefore, it is difficult to distinguish daydreams and fantasies from each other, at least in everyday language. Besides, the experience of these mental events may be indistinguishable from other aspects of the stream of consciousness.

Freud's Theory

The first scientific observations about fantasy came about through the curiosity and pioneering efforts of Sigmund Freud. Freud took seriously the dreams, fantasies, and hallucinations of his patients as meaningful, interpretable events worthy of extensive investigation. Unfortunately, the theory he developed of the wish-fulfilling, drive-reducing, defensive function of fantasy was so influential that it sometimes blocked subsequent efforts to reexamine objectively the structure and functions of fantasy.

Psychoanalysts gradually modified some of the shortcomings of Freud's theory, but the tendency to place fantasy at the fringe of unhealthy personality processes persisted for decades. This trend has been reversed most clearly only by recent experimental evidence involving normal subjects.

Freud's rigid opposition of primary and secondary processes (to be described later) has become softened by more detailed information about the cognitive processes of infants and the functions of the right and left hemispheres of the brain.

Freud's theory of fantasy is of interest today because it is still widely accepted in clinical work and because it has sparked a great deal of controversy. It must be remembered that, because Freud was interested in pathology, he viewed fantasy as an activity of the primitively organized, neurotic, or at best introverted portions of the personality (Frey-Rohn, 1974).

Freud considered fantasy to be a regressive phenomenon, a reaction to the frustration of wishes. Fantasy was the twisted product of thwarted biological drives, unhappiness, and inability to fulfill needs (Frey-Rohn, 1974; Singer, 1975a).

Freud derived his concept of fantasy from the image of a hungry infant (Singer, 1975a). He thought that the baby hallucinates an image of the mother's breast before the mother arrives for the feeding situation. The hallucinated image of the breast was assumed to reduce the aroused hunger drive. Via its potential for catharsis, fantasy supposedly could facilitate the release of accumulated aggressive and erotic tendencies.

Even the fantasy productions of creative writers, thought Freud, could be reduced to artfully disguised

distortions of disappointed yearnings (Freud, 1906/1959). Fantasy was a personal compensation or substitute for unmet ambitions or erotic wishes. It was an escape from the harshness of reality via a turning away from the outside world.

In Freud's view, neurotic and psychotic persons must be particularly prone to fantasies surrounding unsolved libidinal conflicts. These fantasies were judged as unhealthy, unproductive, and unadapted to reality (Frey-Rohn, 1974).

Other psychoanalysts tried to upgrade the status of fantasy both by redefining fantasy as an autonomous function of the ego (Hartmann, 1958) and by viewing it as a beneficial "regression in the service of the ego" (Kris, 1951; Rapaport, 1951).

More recent research (Singer, 1970; Singer, 1975a) has tested experimentally the wish-fulfilling, drive-reducing, defensive theory of fantasy. Numerous studies, using a range of methods including projective techniques, direct frustration of needs and emotional expression, responses to films, and self-report scales, have demonstrated that Freud's theory cannot accommodate the varying and complex outcomes of the investigations. Not only is his theory inadequate to account for the motivation of most fantasy production, but also many of the findings actually contradict its major tenets. For example, fantasy can

sometimes initiate or enhance drives rather than drives leading to fantasy, as in the case of fantasies which contribute to sexual satisfaction or anxiety (Klinger, 1971; Singer & Rowe, 1962).

In response to the notion that daydreams have a cathartic value, Singer (1975a) commented that "daydreams do not have any automatic relationship . . . to the arousal or reduction of a specific emotion such as anger or anxiety" (p. 116). Complex situational cues and learned factors determine the effect of fantasy upon emotion. Moreover, data from daydreaming inventories have failed to show that psychiatric populations display more evidence of fantasy activity than normal groups (Starker & Singer, 1975). On the contrary, Rorschach reports have indicated that disturbed persons have a generally poorer fantasy life than normal persons (Singer & Brown, 1977). Psychotic persons have been shown to be particularly blocked or inhibited in fantasy imagery (Starker, 1979). In any case, Starker and Jolin's (1983-1984) studies with schizophrenic subjects dispelled the myth that the imagery of psychotic persons is more vivid than that of normal persons.

Wilson and Barber's (1983) thorough and detailed study of the "fantasy-prone personality" revealed that women selected for extreme, near-hallucinatory vividness of imagery experiences were no different from a sample of normal women on measures of life adjustment.

Therefore, the occurrence of vivid or frequent imagery per se appears unrelated to mental health (Singer & Antrobus, 1972), but the abilities to use imagery flexibly and to control the appearance of imagery may contribute to healthy personality functioning (Forisha, 1983).

Because fantasy is usually expressed in images, analogies, and metaphors, and because it is not usually very rational or logical, it is very closely associated with Freud's concept of primary process thinking.

According to Freud, the earliest developmental stage of thinking--primary process--is characterized by the following descriptors: pleasure-oriented, wishful, magical, irrational, illogical, chaotic, fluid, pictorial, and oblivious to the objective situation. Primary process is the thinking which belongs to dreams, fantasy, and the unconscious in general. It is free from the following qualities: time, goals, mutual contradiction, inhibition of instinctual discharge, fixed energy investments in objects, and socially modified appearance. Primary process thinking, along with its accompanying affect, is based on the free play of uninhibited energies (Gill, 1967; Holt, 1967).

By contrast, secondary process thinking is, in Freud's theory, the foundation of adult functioning and civilization. Secondary process is characterized by the following descriptors: reality-oriented, rational, logical, organized, goal-directed, abstract, and adjusted to the situation

or task at hand. It is the thinking of the conscious, waking, adult part of the personality. Its energy is stably bound in time to objects, inhibited from instinctual discharge, and neutralized by mechanisms adapted to social expression (Gill, 1967; Holt, 1967).

Freud believed that the secondary process was a developmental progression in cognitive functioning beyond the primary process. Thus, he regarded lapses into primary process thinking as regressive moments in personality organization.

Primary process theory, which includes the emotions that accompany the cognition, was elaborated by Freud and his followers to elucidate personality functioning in mental disorders and in the often strange patterns of nocturnal dreams. The theory remained firm in its assertion that the elements of primary process are inferior to those of secondary process (Frey-Rohn, 1974). As Freud (1923/1961a) stated,

> Thinking in pictures is, therefore, only a very incomplete form of becoming conscious. In some way, too, it stands nearer to unconscious processes than does thinking in words. (p. 21)

Holt (1967) pointed out a series of contradictions in Freud's theory of primary process. He argued that primary process thinking cannot be present at birth, but instead is a product of the development of psychic structure, as is secondary process, too.

Research with infants has shown that object constancy is a perceptual ability developed only after many months of a baby's life. Therefore, the notion of the baby's hallucinating an image of the mother's breast is applied inaccurately to a newborn child (Holt, 1967).

Other psychoanalytic thinkers have argued that primary and secondary processes have been too sharply dichotomized (Gill, 1967; Rapaport, 1951). They point out that in everyday thought these processes are at different points on a continuum and that they are interwoven at various different levels of personality organization.

Gill (1967) commented that the mechanisms of primary process are at least dimly in awareness during wakefulness. The notion of "regression in the service of the ego" implies the constructive-synthetic functioning of some elements of primary process.

In summary, the propositions of Freud's theory of primary and secondary processes are regarded as too rigid by most theorists today. The status of fantasy, presumed to be composed of primary process elements, has been gradually modified by psychoanalytic writers who now allow for a more pervasive and adaptive role of fantasy in thought. Later on, in the discussion of the right and left brain hemispheres, it will become even more clear why Freud's system lacked flexibility.

Jung's Theory

Carl Jung (1974) was one of the first theorists to reject the notion of fantasy as primarily the replacement for a missing drive fulfillment. Just as Jung rejected Freud's dream theory as too narrow and reductionistic, he also moved beyond Freud's interpretation of fantasy as regression. Jung never denied that some fantasies, like some dreams, could be motivated by primitive impulses. However, he believed that the wellsprings of fantasy emerged from the natural, creative tendencies of the individual psyche and the spontaneous, symbolic patterns appearing in the collective mythological heritage of all cultures.

For Jung (1969), the course of personality development, which he called individuation, was mediated by the transcendent function, i.e., the complex influences facilitating the balance and union of opposing tendencies in the psyche. The transcendent function involves the use of symbols which reconcile the mutual influences of ego and self, conscious and unconscious. Fantasy, including aesthetic and imaginative formulations, is one of the two basic methods leading to the achievement of psychic balance and harmony. Creative fantasy exists in a compensatory and supplementary relationship to the method of understanding (intellectual, verbal formulations) to form the transcendent function (Jung, 1969). Therefore, in Jungian theory, creative fantasy is one of the most valuable of all psychic activities.

The notion of compensation is a major tenet of Jung's (1974) theory. Focusing upon a daydream or a night dream allows the individual to reflect on the present balance of attitudes and functions in the personality. A deficit or extreme of one element in the conscious or unconscious sphere of activity may be compensated in the opposite sphere (Jung, 1974).

> The psyche is a self-regulatory system that maintains its equilibrium just as the body does. Every process that goes too far immediately and inevitably calls forth compensations. . . . Too little on one side results in too much on the other. (Jung, 1974, p. 101)

Jung (1921/1971) described two closely related definitions of fantasy. The first is fantasy in the sense of a fantasm, "a definite sum of libido that cannot appear in consciousness in any other way than in the form of an image. A fantasm is an idee force" (p. 433). It does not refer to anything objective in the external world. It depends either upon an intuitive attitude of expectation or upon the intrusion of unconscious material into awareness.

The second definition is imaginative activity.

> Imagination is the reproductive or creative activity of the mind in general. It is not a special faculty, since it can come into play in all the basic forms of psychic activity, whether thinking, feeling, sensation, or intuition. Fantasy as imaginative activity is, in my view, simply the direct expression of psychic life, of psychic energy, which cannot appear in consciousness except in the form of images or contents. . . . Fantasy . . . is identical with the flow of psychic energy. (Jung, 1921/1971, p. 433)

In Jung's (1974) view, fantasies could serve many different functions, just as dreams could fulfill, for example, reductive, compensatory, reactive, prospesctive, or telepathic functions. The understanding of the role of fantasy, just as the understanding of the role of dreams, must be based on knowledge of the conscious situation of the individual, plus knowledge of the relationship of the conscious personality elements to the background of the conscious mind, which Jung called the unconscious.

The unconscious (Jung, 1974) is not a place or a thing but simply the designation for all those psychic forces, personal as well as collective, which either have been repressed, ignored, forgotten, or have not left a strong enough impression to remain in the foreground of awareness. Conscious and unconscious are in constant dynamic interplay with the goal of psychic balance and growth.

The conscious mind (Jung, 1974), characterized by concentration, limitation, and exclusion, is embedded within a context characterized by expansion and association. This context includes the irrational and intuitive bases of life. There is a constant dialogue between ego (conscious mind) and self (the totality of the psyche, including the unconscious). This dialogue is mediated by symbols such as those occurring in dreams and fantasies.

Because in Jung's theory the unconscious is seen as a vital source of information for guiding personality

development rather than as a mere repository of repressed wishes, attention to dreams and fantasies is highly valued. Fantasies are purposively, as well as causally, determined. They are movements toward spontaneous self-revelation rather than mere signs or symptoms of frustrated desires (Frey-Rohn, 1974). A person's fantasies can anticipate change, renewal, and healing tendencies in personality development because their ultimate source is the creative activity of the unconscious (Jung, 1974).

The images occurring in fantasies and daydreams are symbols produced through the natural effort of the psyche to communicate its reality and to attain meaningful spiritual values (Frey-Rohn, 1974). Symbols are representations or formulations of complex realities or experiences which include both conscious and unconscious aspects (Jung, 1921/1971).

Jung (1969) stated

> The psyche consists essentially of images. It is a series of images in the truest sense, not an accidental juxtaposition or sequence but a structure that is throughout full of meaning and purpose; it is a picturing of vital activities. And just as the material of the body that is ready for life has a need of the psyche in order to be capable of life, so the psyche presupposes the living body, in order that its images may live. (pp. 325-326)

Greenleaf (1978) pointed out that images are vehicles of thinking particularly well suited to the expansion of meanings because they express relatedness and interactions rather than fixed entities or states. To reduce an image

to any one of its many possible meanings, he continued, is to annul its dynamic quality. Fantasies, consisting largely of images, may be understood only in the context of the situation and personality of the daydreamer. There are no uniformly fixed interpretations of fantasies, just as dreams are not reducible to fixed meanings.

Jung (1921/1971) distinguished between active and passive fantasies. Passive fantasies result from unconscious processes which are largely dissociated from conscious control. These fantasies may overwhelm conscious life and cause serious disturbances, especially if they are invested falsely with objective reality (such as hallucinations of a negative type). The conscious awareness of the individual is then undermined by the flow of energy into fantasy productions which reflect autonomous complexes.

Active fantasies, in contrast,

> owe their existence . . . to a conscious propensity to assimilate hints or fragments of lightly-toned unconscious complexes and, by associating them with parallel elements, to elaborate them in clearly visual form. It is . . . a question . . . of a positive participation of consciousness. (Jung, 1921/1971, p. 428)

Active fantasies are evoked when people attend intuitively to those aspects of their mental-emotional life which are not clearly in awareness. In Jung's (1921/1971) method of "active imagination," some images form gradually and then are associated with other images and ideas. Passive

fantasies, by contrast, appear abruptly as images, without this sort of intuitive set or attitude of expectation.

The sources of fantasy are two-fold (Jung, 1921/1971). Fantasies and daydreams may arise from the subjective concerns and conflicts currently experienced by the individual. Jung believed that beyond this personal source there are archaic aspects of fantasy which reflect the collective patterns of fears, wishes, and wisdom of all people from all times.

In states of reduced conscious control over thinking, certain inherited, primodial images, which Jung (1968) called archetypes, may appear in fantasies. Archetypes are predetermined patterns of perception which are analogous in function to the role of instincts in behavior. They are carriers of transformative energy, and they press for attention so that their meaning may be integrated into the life of the daydreamer.

The motifs in legends and fairy tales reflect a type of nondirected, associative thinking often found in children and primitives (Jung, 1956). Although the directed, language-based type of thinking most common to adults in our culture today is highly adapted to outer reality and technological advancement, the mythological mode of thought is important for working through subjective realities. The fantasy material in fairy tales reveals in symbolic form the attitudes and abilities necessary to confront the major

personal life tasks and rites of passage which are part of the individuation process.

In remarking on the differences between directed thinking and fantasy thinking, Jung (1956, 1966) warned against the danger of glorifying directed thinking, even though it has brought enormous progress and material improvement. If directed thinking is allowed to dominate all thinking, the personality will be subjected to a one-sidedness which prevents it from coming into contact with the creative, unconscious forces that only the play of associative fantasy thinking can uncover.

Stevens (1983) argued that Jung's system of psychotherapy was designed to correct the modern overemphasis on directed thinking and its preoccupation with the controlling functions of the ego. The tyranny of this type of thinking may lead to the total impoverishment of instinctual rootedness in history and nature and, at worst, may lead to the destruction of the human species. By introducing methods involving the imagination, said Stevens, Jung was trying to tap the intuitive, nonrational, synthetic propensities of the psyche necessary for growth and to bring these into balance with conscious life.

Contemporary Theories

Unlike Freud and Jung, the more recent researchers Jerome Singer (1966) and Eric Klinger (1971) did not devise

their theories in the context of a system of psychotherapy. Their explanatory schemes closely followed observations made during extensive studies of cognition and perception performed under laboratory conditions plus data from self-report instruments. Their arguments were formulated in a more objective language than that of Jung and included, of course, physiological information unavailable in Jung's time. However, the character of fantasy in their theories may be seen as a general confirmation of Jung's descriptions. Singer and Klinger did not subscribe to the theory of archetypes, but nothing in their formulations directly contradicted the possibility of such influences.

Singer (1966) defined daydreaming as "a shift of attention away from an ongoing physical or mental task or from a perceptual response to an external stimulation towards a response to some internal stimulus" (p. 3). Singer and his colleagues used the shorter, operationalized concepts of "stimulus independent thought" or "task irrelevant mentation" during an information processing task (Antrobus, Singer, Goldstein, & Fortgang, 1970). Singer (1970) defined stimulus independent cognitive events as "experiences or reported events . . . which occur without any discernable external stimulus . . . "(p. 134).

> A fantasy is probably best viewed as a subtype of daydream that usually involves somewhat greater speculation, somewhat more of a thrust toward future possibilities, or a juxtaposition of elements from long-term memory that may have much less probability of occurrence in the external

> life of the individual. (Segal, Huba, & Singer, 1980, p. 37)

Singer's (1970) account of information processing followed the model of Tomkins (1962-1963). The brain codes input material in the form of sensory and verbal images and then directs these images into short-term and long-term memory systems.

Visual and auditory inputs lend themselves to "parallel processing," in which there is a simultaneous and diffuse overlapping of experience. Verbal, more abstractly schematized inputs involve a more "sequential" (linear) processing style (Singer, 1974b). Parallel and sequentially processed inputs may occur together, or they may occur in a pattern of shifting from one to the other process (Singer, 1978).

Depending on the personality style of the individual and the time allowed for short-term reverberation of the stimulus, information may or may not be coded in long-term storage (Singer, 1970). For example, persons rushing from one external source of stimulation to the next may be unable to store as much of their experience in long-term memory as more reflective persons.

Just as external stimuli can arouse emotions, so can internal stimuli generate various affective responses, especially when external events are minimally arousing. As Tomkins (1962-1963) explained, we are born with a differentiated set of emotions which are partly triggered off by the

type of stimulus load upon the organism. Expectations (called plans) and anticipatory images guide emotional responses. Information presented at an assimilable speed and in moderate amounts may lead to interest, surprise, and joy. In contrast, a sudden or complex burden of plan-discrepant information may lead to fear or anger.

Singer (1978) reported on a number of experiments which indicate that attention to ongoing, internal thought (such as daydreaming) may be a powerful tool for arousing emotions and changing moods. New stimulation may be produced via individuals attending to inner events, which also, through associations and images summoned from long-term memory, provide them with the possibility of maximizing positive affect (Singer, 1966). Events coded in the form of sensory images are more likely to arouse emotions and to permit more detailed scanning of specific memories than verbally coded events (Singer, 1974b).

Singer (1974b) argued that inner-attentive persons may have more opportunities to elaborate upon unfinished business, i.e., stored material which cannot be readily assimilated. Unfinished business--ambiguous or incomplete experiences which may be brought eventually into conscious awareness--may be reprocessed and stored again in a new way, thereby facilitating the retrieval of other, more cogent material.

The brain is continually processing material from two separate and competing stimulus fields (Singer, 1974b). For the purposes of survival and task achievement, the individual is forced to attend to the ongoing stimuli of the external environment. Most people in western culture are conditioned to ignore the inner domain of stimuli, observed Singer. They may be largely unaware of their daydreams.

Nevertheless, a large amount of research has shown that some processing of inner events is going on continuously in waking and sleeping states (Singer, 1974b). Experiments using reports of private mentation during signal detection tasks reveal that often complex patterns of imagery and thoughts irrelevant to the task are constantly unfolding. Such ongoing mentation is difficult to suppress, even under experimentally-induced high motivation to concentrate on the problem-solving task (Antrobus et al., 1970; Antrobus, Singer, & Greenberg, 1966).

There are individual differences in the way people respond to inner and outer stimulus fields when the two are in competition in experimental situations. For example, active daydreamers may perform a task less accurately than other subjects, presumably in order to maintain the "channel space" for processing their own fantasies (Antrobus, Coleman, & Singer, 1967).

Klinger (1971) defined fantasy as

> verbal reports of all mentation whose ideational products are not evaluated by the subject in terms

> of their usefulness in advancing some immediate goals extrinsic to the mentation itself; that is, fantasy is defined as report of mentation other than orienting responses to, or scanning of, external stimuli, or operant activity, such as problem-solving in a task situation. [This definition] . . . includes a daydream about the possible course of a future interview, but it excludes a planning session on how to conduct it. (p. 10)

Just as dreams form a baseline activity during sleep, fantasy forms a baseline activity in the waking state, according to Klinger (1971). There is a constant, ongoing flow of ideation unless it is interrupted by directed, problem-solving activity. Free (as opposed to projective) fantasy "is defined conceptually as spontaneous covert symbolic activity that is not part of a perceptual scanning process or of directed problem-solving" (p. 90). It occurs without the intervention of the experimenter.

Klinger (1978) preferred to divide thought into two classes which he called operant and respondent. For theoretical reasons, the labels follow closely B. F. Skinner's (1953) concepts of operant and respondent behavioral conditioning.

Klinger explained that most investigators of thought have divided it into two categories represented by a "directedness" pole at one end of the continuum and fantasy at the other end. Various other parallel, dualistic formulations have been labelled primary versus secondary process (Freud, 1900/1961b), R-thinking (realistic) versus A-thinking (autistic) (McKellar, 1957), realistic versus

impulsive thinking (Hilgard, 1962), and directed versus autistic thinking (Berlyne, 1965). The Freudian concepts have been discussed already in a previous section, and the other above theories are in the general direction of Freud's descriptions. Jung's notions of directed thinking versus fantasy thinking also have been mentioned.

Respondent thought is characterized as largely nonvolitional, unconcerned, with feedback upon its effects, effortless, nongoal-related, and reactive in the sense of being elicited (Klinger, 1971). In contrast, operant thought is characterized as willed, checked with feedback about its effects, striving, goal-directed, and active in the sense of deliberate, controlled attending (Klinger, 1978).

Klinger (1978) operationally defined fantasy as sequences of respondent thought. However, he was careful to furnish detailed support for the assertion that, in practice, operant and respondent thought can not be neatly segregated.

During the occurrence of thought segments classified as either operant or respondent in their structure, the imaginal stream is similarly determined in either case because respondent elements continually influence and even instigate problem-solving thought. The more difficult the task at hand, the more respondent thought seems to intrude upon operant thought (Klinger, 1978).

According to one hypothesis, there may be a rapid shifting between operant and respondent modes. The alternative hypothesis proposes that there are two channels or streams of thought, one operant and one respondent, available at the same time, although one of the modes may be more or less suppressed. Klinger remarked that the respondent channel may be used to attune and to adjust directed thinking. He suggested a parallel between this function of respondent thought and Jung's description of the function of intuition (Klinger, 1978). (Intuition in the Jungian scheme of personality will be discussed in a later section.)

Not only do operant and respondent modes fail to exclude each other, but there may be even situations where their distinctions seem to disappear. Klinger (1977) cited the peak experience, Maslow's (1968) well-known concept, as an event in which a creative synthesis of fantasy and productivity results in a single thrust of activity in which respondent and operant modes are united. A peak experience would be then a special case of the operation of what Jung called the transcendent function in which imagination and understanding are united.

Although they are closely related, Klinger's respondent thought and Singer's stimulus independent thought are not interchangeable concepts (Klinger, 1978). Singer's concept, in contrast to Klinger's, includes some operant elements which may be retrieved from long-term memory (Klinger,

1971). One experiment (Klinger, 1978) showed that setting-related (stimulus bound) thoughts were sometimes rated by subjects as respondent, while setting-unrelated thoughts were rated as having some operant qualities. Therefore, although the two concepts share some similarities, they are not identical.

Klinger (1978) discussed several other classes of thought with regard to respondent and operant modes. First, he distinguished between fanciful and realistic thought. Fanciful thought may or may not be relevant to a task. Imagining improbable events may simply create a vivid daydream, but also it may lead to the solution of a difficult problem. An example is the "brainstorming" session in which an individual or group expresses every associated connection to a theme which comes to mind. Sooner or later, a new perspective may emerge which heralds a solution to the difficulty. Therefore, fanciful thought may be either operant or respondent.

Another functionally independent dimension of thought is well-integrated versus fused (degenerated) thought. Dream-like thought may be coherent and intact, or it may include images which do not retain their separateness, especially during some kinds of altered states of consciousness. For example, a person may imagine a tree which has the head of a fox. Fused thought may occur in either operant or respondent modes.

A further distinction, proposed by Watkins (1976) and noted by Klinger as seldom investigated, is that between the daydream and the waking dream. Watkins suggested that, in the daydream, the daydreamer is consciously identified with the activity, whereas in the waking dream, the subject (or ego) is experienced as a pure, unattached observer of the activity. Both of these types of inner activity may be considered as respondent, according to Klinger's (1978) observation.

In summary, these five classes of thought--operant versus respondent, stimulus-independent versus stimulus-bound, fanciful versus realistic, well-integrated versus fused, and daydream-like versus waking dream-like--are some of the more important ways of characterizing normal conscious flow (Klinger, 1978).

Both Singer and Klinger have tackled the question of why people daydream. Both have offered explanations which are alternatives to older theories that postulate the existence of drive states as the motivators of fantasy activity.

As previously mentioned, Singer connected his theory of fantasy with the affective, information-processing model of Tomkins (1962-1963). In this view, much behavior is considered to be motivated by a person's wish to increase positive affects and to minimize or control negative

affects. Daydreams, as inner images, carry the potential to influence moods.

Klinger's formulation involved the motivational construct of the "current concern." He claimed that the content of thought at any moment is determined both by a person's ongoing current concerns and by the external and internal cues of the moment which relate to these concerns (Klinger, 1978). A current concern is defined as the state of an individual between the point in time of commitment to a certain goal and the point in time when the goal is either attained or abandoned (Klinger, Barta, & Maxeiner, 1980).

It is more likely that various aspects of current concerns (such as unfinished business) will be reflected in people's fantasy behavior rather than concerns removed from their present, everyday life. Much of Klinger's research has been designed to test this theory (Klinger, 1971, 1977, 1978).

Issues and Historical Background in the Study of Mental Imagery

The scientific study of the imagination has been accompanied by a history of theoretical debate (Richardson, 1969). It has given rise to an expanding literature with little agreement or uniformity in defining phenomena related to imaginal processes. Today, it is understandable why early investigators of individual differences in imaginative capacities encountered slippery problems. Only in the

present decade have researchers begun to design experiments which consider the multiple variables involved in studying the imagination.

The terms daydreaming and fantasy, seen as "normal" processes composed of imagery and affect, are very recent terms in established psychological literature. Psychologists first began to explore the imagination by examining mental images (Horowitz, 1970). Historically, the major controversial issues have included how to define mental imagery, how to classify it, how to measure it, and how to estimate its importance with regard to other aspects of the personality.

This section reviews some of the issues considered relevant during the history of studying the imagination. Thereafter, a brief history of the changes in research interest in imaginal processes provides a perspective on the current status of the subject.

Richardson (1969) pointed out that mental images were traditionally defined as quasi-sensory or quasi-perceptual experiences. Since such experiences exist in the individual's awareness without the outer stimulus conditions that could produce real percepts or sensations, they have different consequences from the latter. This definition was refuted by well-replicated experiments which showed that images could not always be distinguished from "real"

percepts on the basis of quantitative or qualitative intensity (Perky, 1910; Segal & Nathan, 1964).

A further complication arose with the observation of synesthesia, a mixture of different senses together, such as color-sound. Moreover, research on hallucinogens, altered states of consciousness, hypnosis, and electrical stimulation of the brain, made it thoroughly untenable to argue for a strict separation of percepts and sensations from mental imagery (Richardson, 1969).

According to Horowitz (1970), it was once believed that all thought consisted of images which were linearly associated. Following that, the contention of possible imageless thought proposed by the European Wurzburg School of Psychology plus the experimental findings of the European Gestalt psychologists disproved any notions of the simplicity or linearity of thought as images.

Attempts to define imagery have been closely associated with numerous systems to classify it. Some of the widely researched categories of mental imagery reviewed by Horowitz (1970) are vividness, controllability, relation to perceptual phenomena, context, and content. A further source of confusion is that subjective reports of imagery experiences show consistent independence from objective measures of tasks assumed to involve imagery (Tower & Singer, 1981).

A recent study by Ireland and Kernan-Schloss (1983) provided a good illustration of some of the difficulties of

trying to compare different types of imagery for relationships to personality variables. The authors wanted to find out if the style of one memory and one daydream recorded in writing by 56 college student subjects was influenced by their personality type on the Myers-Briggs Type Indicator. In particular, the personality dimensions of extraversion-introversion and thinking-feeling were examined with regard to, among other criteria, vividness of imagery, degree of interpersonal content, and emotional tone.

The hypothesized greater vividness of imagery in memories and daydreams of extraverts was not supported by the data, nor was the content of imagery influenced by extraversion-introversion. However, for the memory samples, the thinking-feeling dimension was a significant factor. Feeling types scored higher on vividness and emotional intensity of memories than thinking types. These results were not true for the daydreams. For the daydreams only, feeling types reported more themes with interpersonal content than thinking types.

The memory passages were more vivid, more intense in emotional tone, and more focused on the impact of events on people than the daydream passages. The daydreams were more emotionally positive, and their content included more relationships with others than did the content of the memories.

Ireland and Kernan-Schloss argued that the discrepant thinking-feeling dimension results were due to the

difference in imagery processes between memories and daydreams. They observed that it is difficult to control for the phenomenon that a subject instructed to record a daydream may evoke a remembered daydream rather than one freshly experienced. They pointed out further that the contradictory findings of many studies on imagery and personality may be attributed to the differing sources of imagery. Samples of imagery close to experience may be very different from measures of self-reported imagery. Moreover, the social desirability factor that a person may wish to appear rich in imaginative vividness may slant the results of a great deal of research. Finally, most studies of imagery to date (such as the aforegoing one) do not report separate scores for males and females, although it is well known that most personality research yields sex differences.

Another study (Delahanty, 1977) of the same type tested 125 male college students for differences in recorded dreams between introverts and extraverts on criteria similar to those in the study previously reviewed. There were no differences in extraverted dream content, affiliative tendencies, or color in dreams between the two groups, but the introverts reported significantly more themes of anxiety, guilt, and embarrassment. Again, the variables which interfered with the previous study may have accounted partly for the results of this research, too.

Another important issue noted earlier by Jung (1921/1971), the distinction between active and passive imagery, has won increased attention (Gordon, 1949; Horowitz, 1972; Richardson, 1969). Imagery which is elicited and imagery which occurs spontaneously seem to involve two very different cognitive processes with different implications and large individual variations (Holt, 1972; Starker, 1974a). Forisha (1978) claimed that a crucial factor in personality organization is the flexibility of an individual to evoke helpful (active) images.

There have been differing views on whether images are conscious creations, unconscious thoughts, or both (Tower & Singer, 1981). Most research supports the argument that imagery may be processed with or without conscious awareness (Bugelski, 1977; Pope & Singer, 1978). There is some evidence that imagery has an impact regardless of whether or not the individual is able to report verbally upon its effects (Singer, 1974b).

Holt (1972) presented evidence for wide variations in the nature of different types of mental imagery. He asserted, however, that the sources of imagery--memory, external stimuli, and processes internal to the sensory system--are based on generally shared informational programs in the brain. Holt used the term image to refer to "a subjective phenomenon that may have any combination of external and internal influences" (p. 13). In other words,

perceptual imagery and mental imagery are on a continuum of outer to inner influences.

There is a current trend to emphasize the unity of sources in various imagery processes, including a softening of the distinctions between daydreaming and night dreaming. Starker's (1977) research comparing nocturnal dreams with daydreams supported this trend. He concluded that stimulus conditions and personality variables bring about large differences in what people express about mental imagery.

Starker's (1974b) work demonstrated stylistic consistencies in the structure and affect of both night dreams and daydreams. Different personality styles in daydreaming correspond to differences in the structure of night dreams. Starker (1978) argued that the structural limits of fantasy are continuous across the modalities of waking and sleeping. These limits are shaped by specific personality tendencies. A more recent study by Starker and Jolin (1982-1983) with Vietnam veteran subjects provided convincing evidence that style of fantasy transcends state of consciousness.

Kripke and Sonnenschein (1978) used the term waking fantasies to express the relatedness of daydreaming to night dreaming. Their experiments indicated that waking mental content, like night dream content, is cyclic. They speculated that waking and sleeping fantasies have common biological mechanisms. However, they cautioned that more

research is necessary to clarify the role of fantasies in waking life.

Kramer and Roth (1976) also found support for the continuity of structure between night dreams and waking fantasies. However, their data showed that there is no simple continuous or compensatory relationship between night dreams and daydreams. Important sources of variation are the imagery content and the sex of the individual.

Several other studies (Cartwright & Monroe, 1968; Fiss, Klein, & Bokert, 1966) have contributed to the conviction that dreams and fantasies serve such similar functions that they may not be properly segregated into two different ideational modes. Most theorists (Hall, 1953; Klinger, 1971) agree that in structure, function, and content, dreams and fantasies are very similar and shade into one another.

Another issue has been concerned with whether or not the study of mental imagery should be separated from general cognitive theory. This debate initially included questioning the importance of imagery in thought.

Cognitive psychologists interested in the storage, processing, and retrieval of information in the brain have been distressed sometimes by the impreciseness, oversimplicity of metaphors, and loose speculations of other psychologists studying mental imagery phenomena (Kosslyn, 1980). Some researchers of cognition prefer to reduce

imagery to the status of an epiphenomenon, better discussed under general cognitive theories.

It is currently assumed that there are two separate, parallel systems for coding information in the brain, the verbal mode and the imagery mode of thought (Paivio, 1971a). The verbal mode reduces complexity via abstraction. The imagery mode is advantageous for the recall of emotion and concrete detail. The debate continues that perhaps a third code would be necessary to mediate the verbal and imagery (perceptual) modes. In that case, it might be superfluous to maintain a theory about images separate from other representional explanations (Pylyshyn, 1973).

The consensus in current literature is that mental imagery presents some unique aspects and problems, even though it may not be the exclusive basis for all internal representation.

At one time it was thought that imagery processes such as private fantasy could have little impact on a person's life. By now, the importance of imagery in human experience is widely recognized.

Segal (1971) was able to show that imagery and perception share common brain pathways. Paivio (1971b) demonstrated the importance of imagery in learning, memory, and language. Further studies (Antrobus et al., 1970) supported the notion that privately generated mentation is closely

related to the imagery modalities shared by both perceptual and thought processes.

Strong evidence (Doob, 1972; Holt, 1972; McKellar, 1957) has supported the claim that all human beings have the potential to form images in various modalities (seeing, hearing, etc.), regardless of differences in recall or self-report. Some theorists (Arieti, 1976; Bugelski, 1970; Gordon, 1972) have argued that meanings and emotions are shaped and changed through the mediating function of imagery. An expanding literature attests to the power of imagery processes (Sheikh, 1983).

Klinger (1981) explained that sense data are perceived in a meaningful way via neural models or schemata, of which images and affects are conscious aspects. Neural models--integrated response sequences--continue to operate even without outer sensory activation. Therefore, the flow of images (the stream of consciousness) includes all the perceptual, cognitive, and affective elements necessary for adaptive human functioning.

According to Klinger (1981), experiencing something in imagery involves the same central psychological processes as all other activities. Mental images function similarly to physical sensations in activating visual (or auditory, etc.) information processing (Finke, 1980). They have been shown to produce weak motor effects which correspond to patterns of imagined activity (McGuigan, 1970). Also,

mental images are capable of arousing emotions (Strickland, Hall, & Anderson, 1975). Moreover, imagery is a spontaneous response to cues related to people's current concerns, even when steps toward the goals implied by these concerns cannot be taken immediately (Klinger, 1978).

Klinger (1981) concluded that imagery represents anticipatory perception and action, carries emotion, and operates on motivational principles like those governing overt behavior. Therefore, its flow encompasses all major human functioning except end organ sensation and motor activity.

Even more interesting is the clinical evidence that manipulating imagery modifies the schemata on which subsequent behavior patterns are based. As the research shows already (Singer, 1971), the use of imagery in psychotherapy is a powerful tool for change. A comprehensive review of the clinical uses of mental imagery has been provided by Sheikh and Jordan (1983).

In summary, a number of controversial issues have been part of the study of mental imagery. The definition, classification, measurement, source, and importance of imagery have all led to differing approaches among psychologists. Research trends today include examining the sources of dreams and fantasies, distinguishing sex difference in the imagination, and seeking ways in which imaginal processes contribute to personality change.

A Historical Sketch of the Study of the Imagination in America

The study of the imagination in America had its European foundations in the work of Fechner, Galton, Charcot, and Wundt (Strange, 1978). Titchner, a student of Wundt, was an early investigator of individual differences in the imaginative capacities of Americans.

According to Strange (1978), research on imaginal processes was influenced by three views of consciousness, all of which came to America from abroad. One of these was the psychoanalytic perspective, which emphasized unconscious processes and considered some types of fantasy as escape from reality. Another was phenomenological psychology, brought to America in the 1920s by Gestalt psychologists. This view recognized the wholeness of percepteual and learning experiences. A third vista was transpersonal psychology, based on Eastern philosophies concerned with the inner spiritual realm. All of these approaches provided the impetus for research on the role of the imagination in personality functioning.

It is interesting that, in Europe, descriptions of inner life and introspective processes have been given more unquestioned acceptance than in the United States. Even today, a reverence for images and symbols is more likely to characterize European than American investigators. The richness of theories of imagery in Europe may be contrasted

to the extensive practical application of imagery techniques in the United States (Singer, 1974a).

According to Strange (1978), the earliest American psychology was mainly an introspective study of separate, conscious mental processes such as willing, feeling, thinking, and perceiving. These processes were not seen necessarily as connected events.

The pragmatist James (quoted in the introduction) brought to the study of psychology a more active concept of cognition with his metaphor of the stream of consciousness or stream of thought (Strange, 1978). Because of the centrality of experiencing in Jamesian theory, consciousness came to be defined as thinking--meaning all mental functioning--in contrast to consciousness as a thing or a place. It would be difficult to overestimate the importance of James' active concept of the stream of consciousness. Today, it is accepted that all images are the products of an active process of construction (Holt, 1972).

After James' death in 1910, the study of imagery began to lose its vigor as behaviorism became the major concern of psychologists (Holt, 1964). By 1920, the investigation of inner experience had been ostracized from the mainstream of scientific inquiry. Mental imagery was criticized as subjective, mentalistic, and incapable of objective, operational methods of investigation. Behaviorists rejected

introspection and ignored fantasy processes, denying them importance in their own right.

During what Klinger (1971) has called a 40-year "moratorium" on inner experience in America, no major book appeared which was devoted to the systematic study of mental imagery. Meanwhile, psychoanalysts continued their exposition of the pathological aspects of fantasy and the defensive functions of night dreams and daydreams.

At the same time, a very different development took place in Europe (Singer, 1974a). The followers of Jung and other psychologists became even more interested in the role of the imagination in personality. They influenced the appearance of the stream of consciousness type of novel made famous by James Joyce. Stimulated by Jung's concept of "active imagination," therapists in France, Germany, and Italy developed elaborate theories and techniques of guided fantasy as a therapeutic method.

In America, however, mental imagery as an independent theme of research lost ground until almost 1960 (Holt, 1964). The field of psychology was dominated by behaviorism, and in the resulting atmosphere few incentives remained for studying inner experience.

Holt (1964) explained that the impetus to investigate mental imagery once more came, ironically, from domains unrelated to experimental or clinical psychology. Research in biochemistry yielded the extensive studies of sensory

deprivation necessary to formulate brain functioning models, and the discovery of rapid eye movement sleep and various observations about dreaming emerged from work in neurophysiology.

Technology was advancing rapidly, generating more sophisticated methods of laboratory research in specialized new areas of interest, such as memory, attention, and information processing (cognitive psychology). Such developments pointed to the relevance of imagery. Nevertheless, the symbolic or adaptive nature of imagery was still largely ignored, even in the 1950s.

During the moratorium there was little experimentation with imaginal processes in American psychotherapy. However, in behavior modification, certain techniques using imagery to control neurotic symptoms became very popular. One example was the systematic desensitization of anxiety, a process which makes use of visual imagery. Another important event was the emergence of projective tests, using structured visual images to evoke responses that were assumed to reveal hidden personality traits or needs.

Still another line of research bordering on the study of fantasy processes involved the examination of creativity in individual and group performance. Researchers sought ways to enhance productivity in various tasks by manipulating experimental conditions to facilitate creative problem-solving.

In brief, all these developments seemed to offer practical applications. Perhaps their immediate usefulness and the attractiveness of a greatly expanded technology of new methods helped win back respect for mental imagery, so that its popularity rose again in the 1960s. Behavior modification, projective testing, and creativity research all have become integrated into the study of mental imagery, now an independent line of inquiry.

In retrospect, it seems that during an era of two world wars and burgeoning technology, many factors contributed to the curious fact that imaginal processes fell into such disrepute in American scientific circles. During those generations, there was a general fear that children caught daydreaming might develop abnormally or fail to perform well in school. According to other prejudices, persons who engaged in vivid fantasy were thought to include mainly artists, writers, or neurotics. The American glorification of extraversion, high achievement, and observable productivity seemed to reach a peak by the 1950s. It is important to remember this time of excessive derogation of the imagination because some of the myths about fantasy and daydreaming may still cause misunderstanding today.

The 1960s ushered in a new era of experimentation, aided by a much greater range of psychological models. Social and cultural changes, such as the use of hallucinogenic

drugs and the "third force" in psychology, led to a more positive attitude toward inner experience (Holt, 1964).

Psychologists such as Tomkins (1962-1963) formulated significant new theories emphasizing the role of emotions and affects in motivation. Psychology departments began to turn away from the study of white rats and to reaffirm cognitive and phenomenological approaches to human experience. With increasing practice in using behavior modification methods, even behaviorists gradually softened their position toward inner events (Holt, 1964).

Psychoanalysts such as Rapaport (1951) and Reyher (1963) began to question their beliefs about the role of fantasy in drive reduction and to restrict their theories about the pathological function of fantasy in personality organization. These changes culminated in the contemporary emphasis on fantasy as an ego function (Silberfield, 1978).

Thus, by the early 1960s, changes in the general cultural climate, theory of emotions, behavior modification, and psychoanalytic theory led to a greater acceptance of research on mental imagery (Holt, 1964).

In 1966 Singer published the first report of his systematic and extensive research on daydreaming, using questionnaires, interviews, and formal experimental procedures. This work firmly established that fantasy was a subject indeed worthy of organized, scientific inquiry (Singer, 1966). The preliminary findings, and especially

the development of the daydream questionnaire, served as a basis for expanding the investigation of inner experience. Singer has continued to refine and support his claims about the adaptive importance of imagery in human functioning.

Some Relationships Between Personality and Imaginative Capacities

Even the earliest researchers of mental imagery, such as Galton in the 1800s, were interested in exploring the role of personality factors in the imagination. However, as had happened with the attempt to pin down imagery into simple classification systems, many dimensions emerged to show that the complexity of the task had been vastly underestimated (Neisser, 1970). Striking individual differences in people's mental imagery and in other activities, such as artistic performance, easily could be observed. However, the results of experiments were often inconclusive, unreliable, contradictory, or otherwise puzzling to interpret.

Horowitz (1970) pointed out that the earliest failures to link personality traits to imagery resulted partly from experiments that were designed so simply or artificially that subjects were able to shift their cognitive styles with differences in type of task, conditions, or instructions. Lindauer (1972) criticized the failure in research to distinguish between the availability of images in different modalities and their preference in use. Forisha (1978) argued even more strongly that researchers have

simply ignored the multiple facets of personality interaction with imaginal processes in their attempts to be conclusive about isolated findings.

This section reviews some of the more important broad personality dimensions--trait rather than state concepts--which have emerged as relevant to the study of mental imagery and daydreaming. A concluding discussion on creativity suggests how the personality dimensions are related to one another.

First, it is necessary to discuss briefly some of the measuring instruments frequently employed in studying mental imagery. Of the many instruments available, three of these--the Betts test, the Gordon test, and the Rorschach "M" scale--are described because they are mentioned frequently in subsequent sections on personality dimensions.

Measuring Imagery

Betts (1909) developed the first questionnaire to separate persons of high and low imagery ability on a scale of vividness of imagery. Sheehan (Marks, 1972) revised and adapted Betts' test (Betts' Questionnaire on Mental Imagery) to a shorter form used today to investigate the role of imagery in cognitive functioning. A test subject is simply asked to rate the vividness of a number of imagery experiences (such as the feel of sand) which are named by the experimenter. Sheehan and many other investigators have

demonstrated that the vividness of imagery is a general factor spanning all sensory modalities (Tower & Singer, 1981).

Gordon (1949) constructed a test to separate persons of high and low image controllability (Gordon's Test of Visual Imagery Control). The test measures how well a person can actively structure and modify visual images specified by the experimenter.

The two dimensions of vividness and controllability have been the targets of numerous experiments. They form scales or factors in various test instruments for imaginal processes. It is assumed that, in the attempt to define broad cognitive styles, the vividness and controllability of images play a significant role.

In the 1930s, two major projective tests, the Rorschach and the Thematic Apperception Test (TAT), were designed to measure private experiences related to motivational trends and other structural personality characteristics. While both tests deal with various aspects of an individual's fantasy life, one of the Rorschach dimensions, the human movement response ("M") proved to be especially fruitful as an indicator of imaginal processes. A large body of data exists to document the usefulness and reliability of the "M" response (Singer, 1978).

A high score on "M" is obtained when the subject, in viewing an ambiguous ink blot, frequently is inclined to

associate it with images of human beings in motion. Rorschach found that high "M" scorers tend to have well developed imaginal resources, while controlling, inhibiting, or delaying their motor activity.

The evidence for a positive relationship of "M" responses to fantasy capacity is convincing. High "M" scorers show high imaginative abilities on a number of other test indicators, and they report a higher frequency of daydreams and night dreams (Singer, 1978). High "M" scores have been found to correlate positively with many variables that suggest a preference for thought over action (Klinger, 1971).

Although the Rorschach data are impressive, there is no conclusive proof that whatever the Rorschach "M" measures is similar to other measures of imaginal processes or to the stream of consciousness in general (Singer, 1978).

If "M" responses are placed in a ratio to color responses on the Rorschach test, a measure that Rorschach called the "introversive-extratensive" pattern results. This dimension theoretically provides an estimate of inner-directed to outer-directed life style (Singer & Brown, 1977).

Rorschach proposed that the more introversive type of person would have more inner life, including the capacity for the development of imagery, greater creative ability, and more stable motor activity and emotional expression. By

comparison, the more extratensive type would have more outer life, more reproductive ability, and more impulsive motor activity and emotional expression. Rorschach introversion may be characterized by a "delay" factor, while extratension involves an "emotional surgency" factor.

Attempts to find a positive relationship between Rorschach introversion and self-report measures of introversion have been mostly unsuccessful. It remains a matter of speculation how similar Rorschach's introversion-extratension pattern may be to the corresponding attitude dimension of introversion-extraversion in Jung's theory. Both Rorschach and Jung considered their type patterns to be basic temperaments which are relatively stable within the individual from an early age (Singer & Brown, 1977).

Projective tests like the Rorschach may be unrelated to self-report measures of personality. Moreover, because they use experimenter-determined stimuli, they are clearly inadequate as measure of free fantasy (Singer, 1978).

In summary, three test instruments--the Betts test for vividness, the Gordon test for controllability, and the Rorschach "M" response--provide measures used in many investigations of mental imagery. They frequently are used to validate the results of recent studies, which attempt to consider the personality in its holistic complexity.

Typology Dimensions

> Destruction, like creation, arises from the juxtaposition of opposing forces, and so basic are these contrapuntal oppositions to the fabric of our universe that consciousness and life itself would be inconceivable without them. (Stevens, 1983, p. 247)

In contrast to the older trait and factor approach to understanding the individual, research today concentrates on broad personality styles encompassing thought and affect. Cognitive style, a term which indicates how people prefer to think and to approach experience, is related to their imaginative capacities and to the likelihood of certain behaviors.

The following dualistic typologies have proved relevant to the study of mental imagery and daydreaming: verbalizer versus visualizer types, left brained versus right brained types, and field independent versus field dependent types. The labels within each typology sometimes appear to be tapping similar dimensions of personality functioning. However, the overlap is by no means clear, and the sex of the individual seems to play a greater role than formerly considered in the research.

These three typologies are only very roughly parallel. Few studies have attempted to document their interrelationships, and of those, few produced any coherent results (Forisha, 1983). Nevertheless, it is interesting to examine the research on these dimensions because the Jungian

attitudes and functions, also indicators of cognitive style, may be compared to them.

Verbalizer and visualizer types. The verbalizer-visualizer dimension was one of the first to be investigated. Golla and Antonovitch (1929) found that persons who breathe regularly are more likely to form visual imagery than irregular breathers, who prefer a more verbal-auditory mode of thought. This finding has been very stably replicated (Chowdhury & Vernon, 1964; Short, 1953) and is often used as a check on other verbalizer-visualizer studies (Richardson, 1977).

Bartlett (1932), in investigating perception and memory, found that, regardless of experimental method, some persons tend to rely more heavily than others on verbal description in their responses. By contrast, others make significantly more responses using visual imagery and descriptions of concrete objects or memories. He noticed that the verbalizers (vocalizers, as he called them) were more objective in their classification of responses, while the visualizers more often reported subjective feelings along with their responses.

Roe (1951) found marked differences on a verbalizer-visualizer dichotomy in the thinking strategies of research scientists. In her sample, subjects who were habitual verbalizers were more often the psychologists, anthropologists, and theoretical physicists. Those likely to think in

pictures were more often the biologists and experimental physicists.

Richardson (1969) explained that, theoretically, the verbalizer (also called weak imager or schematic perceiver) attends more to classifying the major features of stimuli. The visualizer (also called vivid imager or literal perceiver) attends more to the sensory details of stimuli.

Paivio (1971a,b) held that, in the brain, visual and auditory imagery serves the symbolic representation of concrete experience, whereas the verbal-symbolic system processes more abstract information. The visual imagery system uses a spatial or parallel organization of information, while the verbal system is specialized to process information in sequential order. Therefore, the visualizer-verbalizer continuum should reflect differences in concrete-abstract and parallel-sequential modes of thinking. Paivio's research tended to support these hypotheses.

Tower and Singer (1981) theorized that habitual visualizers may be more effective than verbalizers in the global grasp of complex information and more flexible in reading situational cues. They may have difficulties in breaking down events into analyzable components and in controlling impulsiveness in the organization of affects and behaviors.

Habitual verbalizers may do well in transforming experiences into socially shared meanings via generalization. They may be more effective than visualizers in

organizing a logically rigorous approach to problems. Their difficulties may arise in dealing with concrete aspects of a situation and in responding adaptively to interpersonal relationships.

Whether these speculations about the underregulated visualizer and the overregulated verbalizer have a sound basis can be decided only by further research (Tower & Singer, 1981).

It should be noted that many people tend to prefer either the verbal or the visual mode, and they use one mode more often than the other in similar situations. It is by no means true that all people can be classified as verbalizers or visualizers. Walter (1953) used electroencephalogram (EEG) patterns with a sample of over 600 people. Supposedly, habitual verbalizers should show more alpha-wave activity than visualizers. He found, however, that about two-thirds of the sample were a mixture of the types and that the other third was about equally divided between consistent verbalizers and consistent visualizers. These results suggest that caution should be exercised in generalizing research findings with groups selected on the basis of extreme response characteristics.

It should be noted also that the availability or preference of a mode of cognitive functioning does not insure its use in any particular situation. Persons with a natural preference for a more verbal and more visual

response to experimental stimuli may behave quite differently in real situations in which learned factors create interference with the natural preference. Learned reinforcements, such as social approval for a certain response, may influence cognitive style. The role of learned associations in cognitive style has not been well explored (Tower & Singer, 1981).

Right brained and left brained types. Bakan (1978) noted that philosophical reflections upon the nature of the mind have always contained references to duality. Religious systems have generally employed symbols to represent two principles: one of analysis, action, masculinity, and the other of synthesis, receptivity, femininity. These dichotomies even appear in ancient systems, such as the yin and yang of Chinese philosophy.

In modern science, the empirical-inductive approach is contrasted with the theoretical-deductive way of thinking. In literary works, other dichotomies have included art-science, heart-head, emotion-reason, and imagination-intellect. It appears today that all of these dimensions have a firm basis in the physiology of the brain.

According to a review of brain research by Bogen (1973), observations of cerebral damage, surgical removal of the right or left brain hemisphere, and experimental severing of the brain fibers (the corpus callosum) connecting the hemispheres have led to some fascinating evidence for the

dual nature of the mind. It is clear that each half of the brain has the independent capacity to sustain the personality if the other half is damaged or missing. Each hemisphere of a normal individual receives the same input but organizes it in a different way so that all the higher personality functions are distributed unequally between the hemispheres. Thus, there are two independent and fully functioning streams of consciousness in one head, but the two hemispheres become specialized to perform some functions better than others.

According to Bakan (1978), Broca first showed in 1864 that articulate language was governed by the left hemisphere of the brain. Because language was considered so important, the notion of a dominant left hemisphere held sway until after World War II. Then, researchers began to explore the possibility that if the left hemisphere was responsible for expression, perhaps the right hemisphere controlled perception.

By now, decades of evidence have accumulated for a dual-dominance theory of psychological functioning. The left hemisphere is specialized for verbal functions. It arranges input in the form of propositions--orderly sequences in which the parts refer to one another. The right hemisphere, by contrast, is specialized for visual-spatial-emotional functions. It recognizes the same input as the left but collates it in a more diffuse, comparative

style, which Bogen (1973) called "appositional." The propositional and appositional modes of the respective hemispheres are opposite as well as complementary (Bakan, 1978; Nebes, 1974).

Persons with an intact brain usually experience a subjective feeling of the oneness of the mind. However, individuals differ greatly in the degree of internal conflict or hesitation they experience before taking a particular approach to solving a problem (Bogen, 1973). The relative dominance of one hemisphere for a particular function is an adaptation which reduces conflict. One brain half performs those skills which the other finds more difficult in order to reduce ambivalence to a minimum (Stevens, 1983). Communication between the hemispheres takes place across the corpus callosum, the complex functions of which are not yet well known.

If the corpus callosum is experimentally or accidentally severed, then it is possible for one hemisphere to solve a problem in one way and the other hemisphere to solve it in another, independent way at the same time. Bogen (1973) argued that this demonstration of the dual mind is not simply an artifact of the artificial splitting of the brain, but, instead, it is an indication that the corpus callosum keeps the independent hemispheres in exact synchrony.

Stevens (1983) suggested that, because of certain types of experience or learning, there may occur an inhibition of information transfer across the corpus callosum, which functionally dissociates the hemispheres to a greater or lesser extent. Some of the dissociative behavior of hypnotized persons or neurotic patients with hysterical paralyses may be explained in this way. Moreover, an excessively rational person may be said to inhibit, via the corpus callosum, information about the emotionally-toned activity of the right hemisphere. Individuals vary in the degree to which information is inhibited from right to left or left to right.

On the basis of experimental findings reviewed by Bakan (1978), left brain functioning may be described as "symbolic, abstract, linear, rational, focal, conceptual, propositional, secondary process, digital, logical, active, and analytic" (p. 163). Right brain functioning may be described as "iconic, concrete, diffuse, perceptual, appositional, primary process, analogue, passive, and holistic" (p. 163). It remains to be investigated further how these capacities are organized via conflict and cooperation to yield the unique personality of the individual.

Bogen (1973) called the general tendency of a person to rely on one hemisphere more than the other, regardless of task and situation, that person's hemisphericity or

laterality. Assuming that the quality of consciousness is influenced by relative reliance on the right or left hemisphere, it is not surprising that personality and behavior exhibit stylistic differences based on the degree of hemisphericity (Bakan, 1980). Hemisphericity, or differential lateral development, thus appears to be the basis for many dualistic typologies.

Research by Day (1964) and by Bakan (1969) led to using the direction of eye movements as a fairly reliable indicator of hemisphericity. From about three years of age, the direction of eye movements is already consistent (Weigl, 1970).

When a person responds to a question requiring concentrated thought, the eyes move in a lateral direction opposite to the brain half being more relatively stimulated. The direction of conjugate lateral eye movements (CLEMs) generally remains consistent for an individual (Bakan & Strayer, 1973; Duke, 1968), indicating, according to Bakan and Glackman (1981), easier triggering of activity in the hemisphere opposite the direction of the CLEMs. However, type of question and experimental setup influence CLEM response.

Subjects who rely more on the right brain half move their eyes to the left (left movers), and those who rely more on the left brain half move their eyes to the right

(right movers). Right and left movers are about equally divided in a general population (Bakan, 1978).

Experiments using CLEMs have shown differences in right and left movers on numerous personality variables including anxiety, defense mechanisms, hypnotizability, dream recall, attentional mechanisms, physiological patterns, values, aptitudes, interests, cognitive processing, and creativity (Bakan, 1978; Bakan & Glackman, 1981; Gur & Gur, 1977). There are so many personality correlates of hemisphericity that only those few will be mentioned here which pertain to mental imagery and daydreaming.

Bakan (1980) reported that the majority of studies have associated an active imagination with the right hemisphere. Studies of brain injury, epilepsy, motoric activity, and relaxation definitely implicate the right hemisphere in the mediation of imagery. Other researchers have found right hemisphere dominance to be associated with intuition, imaginative abilities, and primary process thinking (Dimond & Beaumont, 1974; Kinsbourne & Smith, 1974). Dreams and fantasies have been shown to correspond with EEG records of right hemisphere activity (Bakan, 1976). Stevens (1983) pointed out that imaginal processes such as dreams and fantasies traditionally have been viewed as synthetic, intuitive sources of knowledge, thereby involving the special capacities of the right hemisphere.

An earlier study by Bakan (1969) found that preference for left CLEMs was related positively to the vividness of visual imagery. Meskin and Singer (1974) also found that their left moving male subjects scored significantly higher on various patterns of vivid, visual imagery than did right movers. They concluded that male left movers (right brained types) were more inner-attentive than right movers (left brained types).

Richardson (1977), using a test to tap the verbalizer-visualizer dimension of cognitive style, found in two experiments the predicted association between visually oriented responses and left CLEMs. However, a third experiment yielded just the opposite relationship, indicating the presence of mediating variables that reversed the expected results.

Several other experimental outcomes (Bakan, 1980) which reversed the expectation that imagery is associated with right hemisphere specialization, led Bakan to revise his theory about imagery and the brain. On certain kinds of tasks, such as those used to measure the vividness of directed imagery, the right movers scored higher than the left movers, indicating a left hemisphere superiority (Bakan & Glackman, 1981).

To account for the paradoxical results, Bakan (1980) offered a theory of "raw and cooked" imagery. He proposed that the right hemisphere is indeed the primary seat of the

initial production of pictures or images in other modalities--"raw" images. In relaxed states, in sleep, or under certain drug influence, imagery may appear spontaneously with an affective, regressive, illogical, primary process quality. Most research concludes that the right brain is relatively more involved than the left brain in the production of raw images.

The left hemisphere, the seat of logical, analytic, and more reality-oriented processes, may then take the raw images and "cook" them, i.e., convert or transform them for problem-solving purposes. For the operation of cooking to take place, the hemispheres must be in good communication. Bakan concluded that the right and left hemispheres may be involved in different aspects of imagery. Therefore, imagery is not so clearly localizable in the right hemisphere as previously assumed.

Exactly what it means for the hemispheres to be in good communciation and exactly how raw images get cooked are questions for further research. Studies of creativity, to be mentioned later, may provide additional clues about these processes.

Bakan and Glackman (1981) tested college students, who had been classified as right or left movers, with the Imaginal Processes Inventory, a series of self-report scales concerned with daydreaming, imagery, curiosity, and

attention. Results were greatly influenced by the sex of the subjects.

It was found that male left movers (right brained types) showed a higher need for external stimulation plus greater interpersonal curiosity than right movers. The results of several combined scales suggested to the authors that there is a bias towards extraversion in male left movers. Female left movers showed much more negative affect in daydreams than right movers. These findings confirm the association, proposed in other research (Flor-Henry, 1976; Hommes & Panhuysen, 1971; Schwartz, Davidson, & Maes, 1975), between strong or negative affect and the right brain and between positive emotion and the left brain.

It is interesting to note that the combined male and female right movers (left brained types) tended to score higher than left movers on visual imagery in daydreaming. This result is, once again, inconsistent with the general hypothesis that imagery is associated with the right hemisphere. Moreover, the authors' interpretation that right brained males show a tendency for extraversion seemed to contradict the earlier conclusion of Meskin and Singer (1974) that right brained males are more inner-attentive than left brained types. In other aspects, the results of the Bakan and Glackman study supported the characterizations of hemisphericity described earlier. In summary, it appears that a healthy degree of doubt is necessary in reviewing

claims about how the right hemisphere is connected with imagery processes such as daydreaming.

Sex differences in cognitive strategies are being more carefully noted in current research. Some evidence (Ernest, 1977) has been found that females are not as extreme as males in the functional lateralization of the hemispheres. In other words, verbal and visuospatial abilities may not be as specialized in the left and right brains of females as they are in males. Duke (1968) found a mixed CLEM pattern more often in females than in males. Bakan's (1978) studies have confirmed Duke's results.

In females, the right hemisphere appears to have a more supportive role in verbal functioning than in males. Therefore, when females score highly on spatial imagery abilities, they may attain the scores via mental processes which are slightly different from their male counterparts (Hannay, 1976; Hannay & Malone, 1976).

These and other findings of sex differences in imagery processes make clear the necessity to analyze experimental results for males and females separately.

There are at least two other aspects of hemisphericity and imaginal processes worth mentioning (Bakan, 1978). First, left-handed persons are usually eliminated from experiments on personality correlates of hemisphericity. There is no simple relationship of left-handedness to direction of eye movements. It is not clear if left-handed

persons are less lateralized than right-handed persons in their hemispheric relationships. Secondly, a bidirectional CLEM pattern has been observed in some individuals. One study (Smith, 1972) associated a bidirectional CLEM pattern with high scores on a test of creativity.

Field dependent and field independent types. In the 1940s, Witkin (1977-1978) was among a number of researchers who began intensive studies of individual differences in perception. These efforts led to their identifying various cognitive styles, defined as enduring predispositions to process in certain ways information from one's own body perception and the visual field. A cognitive style is a stable preference for a certain perceptual organization in response to the outer environment.

During more than three decades of empirical research, the dimension of cognitive style which Witkin called field dependence-independence has accumulated a body of literature even more solid and extensive than the work on hemisphericity.

Field dependence-independence is a style dimension assumed to represent broad personality functioning. Studies have associated field dependence-independence with "interpersonal behavior, learning and memory, perceptual constancies, defense mechanisms, autonomic nervous system processes, cultural differences, dreaming, schizophrenia, child-rearing, laterality, and moral judgment" (Witkin,

1977-1978, p. 4). As in the above discussion on hemisphericity, only the factors most relevant to imaginal processes and daydreaming are reviewed.

In a series of laboraory experiments, Witkin (1977-1978) used, among several other tests, a task to find out how people perceived their own body balance in a darkened room. The angle of their chair in the room was manipulated experimentally, as well as the angle of a rod within a frame viewed on a screen. The subjects had to decide whether their bodies were slanted or the rod was slanted in order to correct whatever discrepancy they perceived in the vertical position of the rod. In brief, large individual differences were observed between subjects in the way they processed the information necessary to orient themselves in space. Some individuals gave responses indicating that their body position felt slanted, and others simply thought that the rod was slanted but that they themselves were sitting up straight.

Other tests, such as the task of removing a figure embedded in a context, were gradually added to form a test battery designed to manifest in perception what Witkin called psychological differentiation.

According to the theory, psychological differentiation refers to the complexity and specialization of structure and function of psychological activities. In a differentiated system, psychological as well as neurophysiological

functions are clearly segregated for different purposes. Also, there is a clear distinction between self and outer world.

The better a person can distinguish between self and nonself, the more that person relies on internal frames of reference. In processing information about self and field (context or environment), varying degrees of emphasis may be placed on internal and external referents.

From an early age, individuals appear to be consistent in their degree of reliance on self or field in the process of moving toward a goal (Witkin, 1954). Witkin claimed that such tendencies are so pervasive that the notion of cognitive style includes many other personality functions.

In the field independent style, a person tends to rely more on internal than external referents. Furthermore, field independence is characterized by competence and autonomy in structuring or restructuring an ambiguous situation.

Field independent types are less likely than field dependent types to seek the views of others in the environment in organizing information and prefer, in general, a more impersonal orientation. There is some evidence that field independent people may be less effective than field dependent people in social situations requiring interpersonal skills.

Field independence is associated with active coping and independence of the environment, greater awareness and control of impulses, and higher self-esteem, including a better body image.

In the field dependent style, a person tends to rely on other people and situational cues for information. Field dependence is characterized by less competence and autonomy in structuring or restructuring an ambiguous situation.

Field dependent types prefer an interpersonal orientation. They seem more effective than field independent types in getting along with others in groups because they have better developed social attributes.

Field dependence is associated with passivity, a readiness to accept environmental support and authority, less awareness of inner life, less control of impulses, and more difficulty in accepting oneself and one's body.

Witkin found marked sex differences in performance in tasks of field dependence and independence. According to the results of his studies, women from about age 15 on show a significantly higher degree of field dependence than men in most tasks.

Women are more influenced than men by the context of an item in tasks where the item must be kept separate from the surrounding field. Moreover, in situations in which it is easily possible to accept a field passively as it is, or to regard one's own body in terms of a relation to the field,

women do so more often than men. Men, by contrast, more often deal with the field in an active, analytic way and attend to stimulation from their own bodies.

However, in situations in which the subject was urged or required to manipulate the field or to attend to body sensations in performing a task, there were no essential sex differences in achievement. This finding helps account for the greater variability of women in performing perceptual tasks. Men tend to treat all types of tasks in greater analytic fashion, whereas women are more likely to change their style depending on the nature of the situation.

The foregoing observations from Witkin's (1954) research appear consistent with the aforementioned studies which reported less hemispheric lateralization in females than in males and more inconsistency in females in the direction of lateral eye movements.

Witkin (1954) emphasized that, as field dependence-independence are bipolar process variables, success in achieving goals in the one mode or the other depends on the life tasks in question. Each style has strengths and weaknesses for adaptation to life, depending on the situation involved.

It should be noted that the sex differences in field dependence-independence in Witkin's findings failed to be replicated in more recent studies. Dempsey (1975), using several measures of cognitive style, tested junior high

school students in average and gifted classes. His results showed no sex differences for either group on field dependence-independence or on a measure of cognitive complexity versus simplicity. Specific cognitive style differences among the subjects were related to divergence in intelligence but not to sex. Weissman (1980) found that female college students in her sample were just as field independent as male college students and that they tended to rely as much as the men did upon articulated, as opposed to global, anxiety defense mechanisms. These findings indicate that further clarification of factors which influence the relationship of sex to field dependence-independence is required. It may be possible that, historically, the cognitive styles of women have changed with the changing patterns of female socialization since Witkins' studies in the 1950s.

There are interesting parallels between Witkin's field dependence-independence dichotomy and other dualistic typologies reflecting the global-differentiated or synthetic-analytic polarities of the personality.

Field dependent types of people seem to align with the global, synthetic side of the dichotomy. Studies (Witkin, Dyk, Faterson, Goodenough, & Karp, 1962) have shown that they solve perceptual problems more globally, have a less differentiated concept of themselves and their bodies, and

even use more global defense mechanisms against anxiety than field independent types.

Field independent types of people seem to align with the analytic-differentiated side of the dichotomy. A number of studies have shown that field independent people do better on tasks of verbal fluency and analytic reasoning and that their defense mechanisms are more individualized in comparison to field dependent types (Bakan, 1978).

One study (Weber, 1975) demonstrated that persons with a preference for intuitive perception (according to the Jungian typology) are more field independent than sensing types. Also, introverts with intuition are more field independent than extraverts with sensing. (The Jungian types will be discussed later.) These results were more convincing than those in an earlier study (Stanfiel, 1966) which offered only partial support for the hypothesis of (Jungian) introvert superiority on tasks of field independence.

Another study (Walker, O'Leary, Chaney, & Fauria, 1979) was based on evidence (Paivio, 1971a) that persons who use more imagery have better incidental memory. Results confirmed that field independent persons have indeed better incidental memory and, by implication, depend more on the internal referents of imagery than field dependent persons. However, this association of field independence with imagery is outweighed by other indications that field dependence may

be more closely aligned with the imagery capacities of the right hemisphere of the brain. Undoubtedly more research is needed to uncover mediating variables.

There is some evidence linking field dependence with right brain dominance and field independence with left brain dominance (Bakan, 1978; Cohen, Beret, & Silverman, 1973; Ehrlichman & Cox, 1976; Pizzamiglio, 1974). However, it follows from Witkin's theory that field dependence-independence can be only partially paralleled with hemisphericity because cerebral functioning is hypothetically less lateralized in less perceptually differentiated (field dependent) individuals than in more differentiated (field independent) individuals (Witkin, 1977-1978).

Witkin was careful to explain that no individual is confined to the exclusive use of one cognitive style and that both field dependent and field independent people have access, of course, to both styles. The extent of adaptability of the individual to task demands determines the degree of mobility or fixity of style (Witkin, 1977-1978).

In like manner to Witkin, Bakan (1980) noted that the two brain halves may or may not be in good communication. Each individual, unless brain-injured, has access to both hemispheres and to their respective degree of specialization of function. The most interesting question concerns the relationship between psychological differentiation (as Witkin defined it), or brain lateralization (as Bakan

described it), and the adaptability of the individual. Under what conditions is specialization an advantage or disadvantage?

While the early theories of left brain dominance clearly valued abstract over synthetic abilities, the trend in the field dependence-independence studies has been always value-neutral. Differentiation of psychological functioning may be judged as positive only if the individual is able to switch flexibly enough between styles in order to adapt to changing demands. Most psychological tests do not reveal the degree of integration an individual has reached in the struggle and complementarity of polarities in the personality.

Conclusions about the three typology dimensions. The research indicates only a very loose degree of similarity among the verbalizer type, the left brained type, and the field independent type. Likewise, there appears to be an overlap among the visualizer type, the right brained type, and the field dependent type. It would be a mistake to think of these similarities as more than speculations because there are many individuals who present unexpected combinations of polarities in their personality styles.

In experiments in which the independent variables are the dimensions of verbalizer versus visualizer, right brained types versus left brained types, and field dependent types versus field independent types, there seem to be many

additional mediating variables which lead to variation in results of tests involving imaginal processes.

Creative Processes and Imaginal Processes

> Beloved Pan, and all ye other gods who haunt this place, give me beauty in the inward soul; and may the outward and inward man be at one.
>
> Plato, Phaedrus

Jung's (1974) measures for promoting the individuation process involved stimulating a person's imaginal resources. He encouraged the exploration of symbols in fantasies, dreams, aesthetic productions, and music. It would be fair to conclude that Jung's approach to personality development used imaginative methods designed to counteract the culturally-induced bias towards the extreme verbal-abstract thinking which results in impoverishment of the individual's creative abilities (Stevens, 1983).

The individuation process takes place, according to Jung (1921/1971), through the union and transcendence of opposites in the personality, opposites such as the dualistic dichotomies which have been reviewed above. Therefore, individuation seems to be associated with a combination of qualities which many people call creativity.

It is worthwhile to take a closer look at the theoretical and empirical relationships between mental imagery and creativity. No attempt is made here to give a single definition of creativity because the term is defined in various

ways by different authors, depending upon their philosophical position or experimental method. Subjective accounts and intuitive opinion continue to associate creativity with the visualizer, right brained, field dependent poles of the three dichotomies. However, there is little clear-cut experimental evidence to show that imagery abilities are directly and positively related to creativity.

McKellar (1957) distinguished between R-thinking, which is logical and reality oriented, and A-thinking, which is autistic, associational, and more dream-like. He connected A-thinking with the incubation phase of creative production in which sudden insights and fresh combinations of ideas often play a role. R-thinking may be required in later stages of the creative process in order to provide an idea with structure and form. Richardson (1969), Paivio (1971b), Gowan (1978), McClelland (1964), and others support the hypothesis that early phases of creativity involve concrete imagery.

Most authors agree that creativity involves a shifting between the imaginative mode and the more realistic mode of thought. Eventually, a higher level of integration is reached, encompassing many polarities and withstanding the tensions of opposition and complementarity of values (MacKinnon, 1962). A synthesis of polarities in the personality is achieved via oscillation between right and left

brain processes (Gowan, 1979; Torrence, 1979; Virschup & Virschup, 1980).

Quenk (1966) cautioned that sex differences are basic to interpreting the results of studies of perception, cognition, conformity, and creativity. Her investigation showed significant differences between males and females in the amount and affective tone change of daytime fantasies.

In her earlier research, Forisha (1978) claimed that the relationship of imagery to creativity is strongly influenced by personality orientations and sex differences. The role of imagery in creativity, as yet unclear, may be understood only in relation to the functioning of the total personality, especially with regard to the masculine and feminine qualities of the individual. She cited evidence which indicates a blend of male and female traits in creative persons.

Sex differences, explained Forisha (1978), have produced inconclusive outcomes in studies attempting to relate Witkin's field dependence-independence dimension to creativity. Both field dependent and independent types may be equally creative, depending on how creativity is defined and tested. As far as cognitive style may be related to ability, the field dependent types may be more interpersonally creative and the field independent types more creative on cognitive tasks. Such hypotheses remain speculative.

There are some studies (Bloomberg, 1971, 1976; Dempsey, 1975; Noppe & Gallagher, 1977; Spotts & Mackler, 1967) which showed that, although highly field independent subjects are not necessarily creative, highly creative subjects are more field independent than less creative subjects. Forisha suggested that a third category may be necessary to account for the combination of autonomy with reliance on the environment which is found in creative persons.

Helson's (1967) studies of creative women reported that these women exhibit a less self-confident, less active, and less assertive cognitive style than creative men. They also show other more field dependent traits than creative men. In her research, creative women and creative men showed marked differences in other personality variables. However, Bachtold and Werner (1973), who studied creative female psychologists and scientists, did not find those women much different in personality traits from creative males.

Forisha (1978) extended the notion that women have a closer relationship to imagery than do men. Women, she surmised, are more aware of inner, receptive, unconscious processes, and, therefore, imagery may play a greater role in their cognitive styles. Her research shows a low positive relationship of women's imagery to creativity, while no such consistent results could be found for males. The contradictory findings for males suggest that other mediating variables are implicated, such as field

dependence-independence, the controllability of images, or the degree to which the males' humanistic interests involved them in a greater awareness of imagery.

Khatena (1978) saw creativity as "the power of the imagination to break away from perceptual set so as to restructure anew ideas, thoughts and feelings into novel and meaningful associative bonds" (p. 34). He defined the function of the imagination as "the chemistry of mental processing where interactive, intellectual, and emotive forces participate in stimulating, energizing, and propagating the creative act" (p. 36).

In Khatena's view, creativity is more associated with what Richardson (1969) called imagination imagery than with memory imagery. The former involves imagery which has been experienced previously and which evokes other imagery by association. However, Khatena noted that creative processes and their imagery correlates have been studied more recently with respect to the production of original verbal responses.

Researches by Helson (1965) and Shaefer (1969) associated daydream frequency in childhood with later literary and artistic achievements. Singer and McCraven (1961) found a small but significant correlation between daydreaming frequency and creativity in verbal expression. Singer (1975a), in summarizing various studies on creativity and patterns of daydreaming, concluded that divergent productions, i.e., activities involving an original, flexible, associative

style, are related to daydreaming frequency and openness to the imagination. He found that persons of literary and artistic talent are more able than others to recall their night dreams, to describe their own personality, and to daydream frequently.

The role of the controllability of images has become increasingly salient in research on creativity and imagery. Gordon (1949), McKellar (1957), Horowitz (1972), and Richardson (1969) have elaborated upon the differences between autonomous and controlled imagery. Autonomous images are intrusive; they appear or fail to appear independently of the wish of the subject. Controlled images, by contrast, may be evoked or dispelled at will.

Richardson (1969) commented that vivid imagery may have an adaptive role in thought if it is controlled enough not to overwhelm the linear thinking which may be necessary for problem solving. Gordon (1949) found controlled imagery to be more flexible in allowing the individual to adapt to current experience. Autonomous imagery, by contrast, is difficult to modify because it is associated with rigid, stereotyped notions formed through early life experiences.

Hudson (1975) warned of the dangers of both overly rigid and overly flexible imagery. Those persons with too flexible imagery may not be able to distinguish between inner and outer worlds and, hence, suffer from feelings of rootlessness in their imagery experience.

Results of experiments on controllability of imagery and creativity have been contradictory. Forisha's (1978) work suggested a positive association among vividness, control of visual imagery, and creativity, although at best the results indicate only a tendency.

Later research (Forisha, 1981) showed that (for males only) imagery control more often than imagery vividness is related to creativity. This finding is in line with Pine and Holt's (1960) investigation, which indicated that (for males only) the control, rather than the amount, of primary process thinking was more significantly associated with creativity. Durndell and Wetherick (1976) also found support relating divergent thinking to ability to control imagery. Khatena's (1978) studies, on the other hand, tended to link vividness of imagery with creative perceptions and autonomous imagery. Again, the problem of how to define and measure creativity may lead to contradictory findings. In any case, the issue of controllability of imagery has emerged as a centrally important concern with regard to creativity.

Andrea (1983) cited other researchers (Freedman & Marks, 1965; Holt & Goldberger, 1959) who have found that imagery abilities are related to creative potential and creative self-concept. Her own investigation, using the Gordon Test and the Myers-Briggs Type Indicator (MBTI), showed clearly that persons who prefer the use of intuition

as a perceptual mode (intuitive types) are more likely than sensing types to form and to control visual imagery.

Therefore, there was support for an association among various types of creativity, control of visual imagery, and intuition. Strong evidence already was available relating intuition to imagniative ideas (Ross, 1961) and to creative achievement (MacKinnon, 1966; Myers, 1962-1975).

Forisha's (1978) theory of imaginal processes and creative processes was based on the idea of increasing differentiation and hierarchical integration of the personality, a model which has been found in numerous other theories of personal growth and development. Forisha proposed that, in a poorly differentiated condition of personality development, individuals have difficulty to distinguish clearly between inner and outer phenomena. They lack separateness from the environment and are not able to discriminate well between rational and nonrational processes. At such a level of development, people's imagery may be vivid but fleeting, uncontrolled, past-oriented, anxiety ridden, and poorly separated from percepts. Under these conditions, imagery may be a hindrance to abstract thinking and directed productivity.

At more differentiated levels of personality organization, individuals can separate better self from world and can discriminate more accurately perceptual boundaries. However, if the control of distinctions in thinking becomes

obsessive, then all the vague or unclear thoughts may be rigidly repressed. In such cases, imagery may be reduced to a few vivid and repetitive themes which the individual strives anxiously to control. Under these conditions, imagery may be a hindrance to holistic and adaptive thinking.

At a third or "higher" level of personality organization, the individual would be both analytically clear-headed as well as comfortable with ambiguity. At this level, imagery may interact with verbal processes to facilitate creativity.

In summary, the level of differentiation of the personality (not only other variables such as cognitive style and sex) is likely to be an important determinant of the role of imagery in creativity. It is necessary to examine many personality variables before clarifying whether imagery may support or oppose creative thought.

In order to investigate some of the relationships among imagery, creativity, and cognitive styles, Forisha (1983) generated a well-designed study which used a large battery of tests. Only a brief summary of some aspects of this research is offered here.

College students from four fields of specialization--engineering, psychology, business, and education--were administered inventories measuring creativity, imagery control, field independence, art preference, Jungian

personality type (MBTI), power and achievement needs, personal expectations, affiliation, self-confidence, and preference for external or internal structuring of information.

Data were analyzed along the two dimensions of extraversion-introversion and objectivity-subjectivity. The latter continuum was assumed to represent a task-external orientation versus a people-internal orientation. The author hypothesized that objectivity would be linked with the left hemisphere of the brain and subjectivity with the right.

Forisha associated objectivity with the following descriptors: "left hemisphere, analytic orientation, task-oriented, preference for structure, logical, inductive" (p. 332). Subjectivity was related to these descriptors: "right hemisphere, global orientation, people-oriented, resistance to structure, intuitive, deductive" (p. 332).

Among the many interesting results of the study, there were no sex or academic field differences in creativity. However, a comparison of subgroups revealed differing patterns of creativity.

For the entire group, creativity was related to need for power, MBTI feeling, and an aversion to external structure. For men, creativity was associated with control of imagery, while for women it was related to need for power, MBTI intuition and perception, and an aversion to external

structure. Control of imagery was more closely aligned with the overall dimension of objectivity rather than subjectivity and with introversion rather than extraversion.

Creativity was associated with different variables depending upon academic discipline. For example, creativity for engineering students was more related to introversion and a preference for external structure, whereas for psychology students it was more related to extraversion and a preference for internal structure. For both fields, creativity and imagery were associated.

The author concluded that the nature of creativity and imagery must be different for different subgroups. Moreover, for some individuals the relationship between creativity and imagery is central, while for others it appears to be less important. In any case, creativity and imagery are closely interrelated with other cognitive style variables. How maturity and personality integration affect the relationships among imagery, creativity, and cognitive style are still matters of speculation (Forisha, 1983).

Klinger (1971) explained that defining or measuring creativity is a complex task because there are probably different kinds of creativity, depending on the patterns of more dream-like versus more problem-solving thought sequences. Also, certain real conditions must be present in order for individuals to express and exploit their creative perceptions.

According to Klinger (1971), from the large amount of research on creativity, one particularly interesting and reliable personality dimension has emerged. This may be called attention or sensitization to inner turmoil, including the inclination to report or admit it (Bendig, 1960; Byrne, 1964). The readiness to tolerate inner events and to value attending to them may be similar to what Rogers (1959) called openness to experience, a variable theoretically characterizing creative persons. So far, there is no experimental evidence to support the relationship between sensitization to inner turmoil and creativity, but impressionistic research has suggested strongly that creative individuals are more receptive to inner events than less creative individuals (Klinger, 1971).

Review of Test Literature

> Why do I yield to that suggestion
> Whose horrid image doth unfix my hair
> And make my seated heart knock at my ribs
> Against the use of nature? Present fears
> Are less than horrible imaginings.
> Shakespeare, Macbeth

The Imaginal Processes Inventory (IPI) and the Myers-Briggs Type Indicator (MBTI) are both self-report instruments which provide measures of personal style. Details of the construction of the 3 daydreaming styles from the IPI and the 16 personality styles (types) from the MBTI are provided in this section. The IPI is described at

greater length because it is a much less familiar instrument in psychological research than the MBTI.

The Imaginal Processes Inventory and Three Daydreaming Styles

The IPI inquires about attitudes and contents of inner fantasy life, not about concrete behaviors. The MBTI inquires about attitudes as well as behaviors. The Short IPI yields styles which are described in a value-toned language. The MBTI yields types which are value-neutral in theory. The Short IPI assesses aspects of private, inner experience. The MBTI assesses aspects of inner experience as well as preferences that make an observable difference in real situations.

Research on fantasy is so new that most of it is in the early stages of exploration. Before the 1960s there were no large-scale, normative studies of daydreaming and fantasy. Since most people are unaccustomed to attending to their private imaginal processes and may be hesitant to talk about them, an anonymous, self-report questionnaire is probably the best method available of assessing the experience of daydreaming. This is the method with which Singer began his research.

Singer (1966, 1975a) summarized some general findings about daydreams from the research program he directed in the early 1960s. Daydreaming, a normal activity engaged in by everyone at some time, occurs most often when a person is

alone and in a restful physical state. The brain seems to require a certain amount of quiet time and "channel space" for processing imaginal material. During fantasy activity visual imagery is more common than other kinds of imagery, and the eyes engage in very little movement (Singer, 1975a).

It has been the assumption in most memory research that concrete items of information in the form of images are more easily encoded by the brain for long-term storage than abstract material (Gralton, Hayes, & Richardson, 1979; Paivio, 1971b). However, individuals differ, probably according to inborn dispositions, in the way they attend to environmental stimuli and in what information they select for short-term or long-term memory storage (Singer, 1970).

Cognitive style preferences may lead some persons, while daydreaming, to become absorbed in a lengthy review of previous theme-related input which they have retrieved from long-term storage. In contrast, other persons, while daydreaming, may seem to prefer a series of brief reactions to changing stimuli, and, therefore, they develop fewer associations to any particular theme or image. One study (Gralton et al., 1979) found, for example, that persons classified as extraverts (after Eysenck's [1959] definition) are less able than introverts to recall either abstract or concrete memory items. The same investigation also showed that women are superior to men in recalling material from long-term memory.

The defensive operations of the personality also play a role in the storage and recall of imagery (Singer, 1970). Negative perceptions may be followed by rapid processing of a great deal of more pleasant material so that the threatening information has less time to be coded for long-term memory. In other words, the way the brain stores information is probably a very important determinant of the structure and content of daydreams.

According to Singer (1966), daydreams are oriented most often toward problem solving, particularly in interpersonal situations within a limited future perspective. However, daydream content varies greatly in normal individuals. Factors of age, parental identification, cultural background, and opportunities for solitude or stimulation lead to large differences in the frequency and vividness of daydreaming. Intelligence, education, and socio-economic level have relatively less influence on these outcomes. Giambra (1974) reported that women have not only more frequent daydreams than men but also more emotional reactions to daydreams than men.

Frequent daydreaming of the subjects in Singer's studies has been related positively to the following: other types of imaginative behavior, night dreaming, detailed memory, original forms of thought, a varied range of fantasies, greater use of metaphoric language in reports of daydreaming, curiosity about natural events and people, and

greater self-awareness or inner-attentiveness than those with less frequent daydreams (Singer, 1975a).

Fantasy activity may be seen as a skill or ability that may facilitate adaptation and development of the personality. Ideally, a person could learn to shift smoothly between the task-oriented, directed attention required by the outer environment and the enriching experience of inner images and affects. In the process of learning to balance task orientation and fantasy life, people seem to develop characteristic styles of daydreaming (Singer, 1966).

One of the earliest studies (Singer & Schonbar, 1961) to measure the personality characteristics of daydreamers used 44 female graduate students. They were given a detailed inventory about the frequency and patterning of daydreaming plus questions about specific daydreams to which they could respond on a five-point scale. They also kept a log of night dreams, responded to various scales for repression, anxiety, lying, and social introversion, wrote an account of a daydream and an original short story, and answered a questionnaire about their similarity to their parents.

The authors theorized, on the basis of child development research, that introspective tendencies would be related to a closer identification with the mother than with the father. They explained that in our culture mothers are usually responsible for both the aesthetic learning and the

control of impulses in children, whereas fathers tend to represent more direct action on the outer environment. Since delay, inhibition of movement, and impulse control appear to be factors in the development of imaginative tendencies (Singer, 1955), a greater identification with the mother than with the father was hypothesized for high-scoring daydreamers.

Results confirmed that subjects high in daydreaming frequency also displayed more night dreaming, greater creativity in storytelling, and higher need for achievement than low scorers. They showed less evidence of denial and repression and higher levels of anxiety and social introversion (although all these findings were at nonsignificant levels) than low scorers. High scorers also manifested significantly the predicted similarity to their mothers and dissimilarity to their fathers.

The authors concluded that the women subjects differ along a dimension they termed self-awareness or acceptance of inner experience. The anxiety scores were interpreted as a willingness to admit anxieties or complaints rather than as an indication of pathology. As Singer (1966) commented, "The penalty of self-awareness and introspection is the direct confrontation of anxiety" (p. 42).

Another study (Singer & McCraven, 1961), using female as well as male students, supported the association between

relative maternal identification and stronger daydreaming and creative writing tendencies.

Singer and Rowe (1962) found that frequent daydreaming is associated with a general measure of anxiety. They demonstrated that being given the opportunity to daydream in the face of an anxiety-arousing situation has differing effects on subjects, depending on their specific anxieties and emotions as well as on their general tendency to daydream.

Singer and Antrobus (1963) conducted an extensive study designed to test hypotheses derived from numerous theoretical and empirical sources about the nature of daydreaming. They wanted to provide a more detailed description of the various factors which hitherto had composed the global concept of daydreaming used in earlier studies.

One hundred male college students were administered a battery of tests, including, among others, the following: a daydream content questionnaire revised from the Singer and McCraven (1961) study, a scale about daydream structure, questions on night dreaming, measures of curiosity and attentional patterns, tests of divergent production according to Guilford's (Kettner, Guilford, & Christiansen, 1959) studies on creativity, several measures of personality variables taken from the Guilford-Zimmerman Temperament Survey (1949), and scales for Extraversion-Introversion and Neuroticism taken from the Maudsley Personality Inventory

(Eysenck, 1959). In addition, all subjects underwent a structured clinical interview from which their fantasies could be rated on various dimensions.

Twelve categories could be elaborated from a factor analysis of the data. Repeated administration of these procedures with hundreds of other subjects, mostly college-age males and females, resulted in seven categories (Singer, 1966; Singer, 1968). From the complex results, support could be found for distinct daydreaming patterns, such as those related to enjoyment of daydreams, fears and worries, and attentional disturbances.

Two differing types of introversive tendencies, which include the fanciful aspects of imaginal behavior, could be delineated. Social introversion, at the one pole, is linked to curiosity about people and interpersonal situations. At the opposite pole is controlled thoughtfulness, a tough-minded, problem-solving type of introversion. It is linked to curiosity about events in nature. These two types of introversion seemed to clarify the differences between classic descriptions of the humanist and the scientist.

The predicted positive association between fantasy and divergent thinking was not supported. The authors believed that this result occurred because the material, unlike that in most creativity research, was timed.

The investigations of Singer and Antrobus (1963) established the multidimensional nature of daydreaming and

paved the way for revisions of the scales which eventually formed a 400-item, 29-factor self-report instrument, the Imaginal Processes Inventory (IPI).

Another administration of the IPI (Singer & Antrobus, 1972) to college students included all test batteries in the aforementioned studies, plus the California Psychological Inventory (Gough, 1964) and the Stein-Craik (1965) Activity Preference Inventory, which yields measures of Motor and Ideational Preference.

Results of factor analyses for the 64 variables in the correlation matrix of this study revealed three major second-order factors--patterns of daydreaming. One of these called "positive-vivid daydreaming" seems to represent a style which the authors called thinking introversion, in contrast to a pattern of social extraversion also found in this and previous studies. One important observation, from an examination of the intercorrelations between variables, was that the primary daydreaming factors cover a combination of normal as well as potentially psychopathological elements, such as anxiety.

Starker and Singer (1975) later brought evidence for their claim that the three major daydreaming patterns have no direct associations with the symptom patterns of psychiatric patients. Two other studies (Fox, 1981; Frazier, 1974) which explored the relationship of obsessive-compulsive and hysterical pathology to daydreaming styles

failed to find the hypothesized associations. In short, there appeared to be nothing inherently pathological about the daydreaming styles under investigation.

In its final form the Imaginal Processes Inventory includes 344 items which ask about styles of thinking, attitudes about daydreaming, and spontaneous thought content. The test subject responds to the questions in a Likert format (five-point scale) indicating degree of agreement or disagreement. There are 28 test scales from which 8 primary factors can be interpreted. When the eight primary factors are subjected to second-order factoring, three major factors can be meaningfully identified.

In one large, important study (Huba, Segal, & Singer, 1977a) over a thousand college students from a private northern university and a southern rural university completed the IPI plus several other inventories concerned with patterns of drug and alcohol use. Data from these subjects already had been collected to assess motivational needs using Jackson's (1971) Personality Research Form, based on Murray's (1938) list of needs (Huba et al., 1977a).

Six of the eight primary factors of the IPI were found to be stable and theoretically meaningful. The same three second-order factors emerged which had also appeared in previous research. They proved to be as stable over samples differing in sex, motivational orientation, and substance use as over the personality traits examined in other

investigations (Giambra, 1977; Singer & Antrobus, 1972), such as those from the Guilford-Zimmerman scales.

The three recurring factor clusters are assumed to represent three distinct daydreaming styles. Their meaning is based on accumulated theoretical knowledge and empirical research experience from studies of imagery, thought-sampling, nocturnal dreams, and memories (Singer, 1974b, 1975b). These daydreaming styles are described in a large number of publications today (Huba et al., 1977a; Huba, Singer, Aneshensel, & Antrobus, 1982; Singer, 1974a).

The first factor appears to measure a general positive acceptance and enjoyment of inner experience. High-scoring individuals report frequent daydreams with vivid and elaborated imagery, thoughtfulness, many night dreams, and considerable curiosity about others. They believe that daydreams are significant, interesting, pleasant, and worthwhile. They feel, also, that fantasy activity helps them to generate new ideas and alternative solutions to problems. This style is labeled positive-constructive daydreaming.

The second factor is characterized by more negatively-toned responses to daydreams. High-scoring individuals seem to alternate between fantasies of high achievement or heroic acts and themes involving guilt, fear of responsibilities, and failure. They often experience depressing or frightening images and some hostile or angry affect in daydreams.

This style, marked by rather tortured self-examination, is labeled guilty-dysphoric daydreaming.

The third factor is concerned with the tendency to become easily distracted by drifting, poorly controlled thoughts. High-scoring individuals seem anxious, easily bored, and lacking in persistent concentration, although they can become very absorbed in their own mind wandering. Themes of their daydreams are somewhat incomplete, disorganized, and oriented to external influences. This style is labeled poor attentional control.

The second and third styles may be compared to the descriptions of psychological distress experienced, respectively, by the obsessive-compulsive and anxious-hysterical personality types (Shapiro, 1965). However, as previously noted, none of the daydreaming styles appear to be measuring primarily a domain of psychopathology (Huba et al., 1982). Giambra's (1974) research with daydreaming styles across the life span showed that the guilty and distractible styles decline somewhat in strength with increasing age, whereas the positively oriented daydreaming remains consistent for different ages.

There are a few studies which have found associations between the second or third daydreaming styles and behaviors which tend to be evaluated negatively. Cundiff and Gold (1979), Giambra and Traynor (1978), and Starker and Singer (1975) all found that subscales of the IPI concerned with

dysphoric content were related to depression. The results, however, would not justify the claim that persons with high scores on the guilty-dysphoric style are necessarily predisposed to depression. One could say only that persons already depressed are more likely to have a fantasy life characterized by more dysphoric content than that of normal persons. Starker and Hasenfeld (1976) found that nightmares and other disturbances of sleep are clearly related to high scores on measures included in the second and third styles.

Segal (1974) demonstrated that the primary IPI factors concerned with frequency of certain types of fantasy self-report could help predict potential drug use of college students. Segal and Feger (1973) also showed that those students who had more positive attitudes toward fantasy were more likely to experiment with the use of marijuana. Segal, Huba, and Singer (1980) found some evidence linking alcoholism with certain measures of dysphoric daydreaming on the IPI. The area of substance abuse appears productive of clearer associations with fantasy activity than some other areas of behavior often considered undesirable or abnormal.

The Myers-Briggs Type Indicator Theory

The Myers-Briggs Type Indicator (MBTI), like the Short Imaginal Processes Inventory (SIPI), measures personality differences in the realm of normal behavior. Although it is also a fairly recent instrument in personality testing, it

has accumulated, unlike the IPI, a large body of research data which makes it valuable in various applied areas, as well as for self-understanding.

The MBTI is designed to provide measures of the theoretical personality constructs elaborated by Carl Jung. The test's authors Briggs and Myers closely followed Jung's formulations of personality attitudes and functions. They added another dimension to the test theory to provide an indicator of the dominant personality function (Myers, 1962-1975). The entire test construction is based upon Jung's theory rather than upon a more inductive-empirical approach of the sort used in constructing the IPI.

The concept of personality type is part of a dynamic theory of the individuation process of the psyche, described briefly in a foregoing section. In Jung's view (Myers, 1980), a person spends the first part of life learning to become aware of and to develop the natural strengths which emerge from inborn dispositions. Individuality is based upon the combination of a preferred environmental orientation with preferred methods of perceiving and judging experience. Differences between people are the orderly result of how they have learned to specialize, differentiate, and balance these aspects of the personality. Jung's theory is comprehensive enough to allow for genuine change in personality characteristics without the loss of certain basic qualities which distinguish a person throughout life.

With increasing age and environmental mastery, the individual turns more and more to the compensatory development of those aspects of the personality which are less aware, less naturally preferred, and therefore less used in practice. The health and flexibility of the psyche and the level of integration possible depend on continued growth and interest in all personality processes. Therefore, the notion of type is always part of a dynamic system.

Jung (1921/1971) called attitudes the two ways of directing one's interest. An attitude is a fundamental orientation to the environment. In the extraverted attitude, attention flows out to events and people in the external world and to an involvement in action upon the environment. In the complementary, introverted attitude, attention flows inward to the subjective representation of the meanings of outer events.

Everyone uses and shifts between the two attitudes, but the habitual reliance on the one or the other determines attitude type. An extraverted type has developed enduring traits associated with affirmation of the outer world, such as ease in meeting people and new situations. An introverted type has developed traits more adapted to reflection than action, such as thoughtfulness and enjoyment of privacy. The extravert prefers breadth of focus while the introvert seeks depth of concentration.

Independent of the extraversion-introversion orientation, there are four personality functions consisting of two pairs of opposites--two ways of perception and two ways of judgment. The individual shows a preference for one way of perceiving and one way of judging experience. The other two functions are selected less often.

The perceptive functions of sensing and intuition are opposites. Sensing refers to the apprehension of information through the five senses. Persons who rely most often on this type of perception seem to appreciate observable facts, concrete details, experience, practicality, simplicity, accurate observation, immediate pleasure, and realism. They are most attracted to what is known and real.

Intuition refers to the apprehension of information through insight into possibilities, relationships, and symbols. Persons who rely most often on this type of perception seem to appreciate intangibles, theory, complexity, abstraction, inspiration, the play of imagination, and creativity. They are attracted to what is unknown and untried. Intuition is assumed to operate more by way of unconscious, than by conscious, processes.

Sensing types or intuitive types use their perceptive preference to select, organize, and absorb data. In order to make decisions about what has been perceived, another pair of opposites--thinking and feeling--guide judgment.

Thinking refers to the use of logical, analytical processes in order to reach conclusions about perceptions. A preference for thinking judgment indicates that a person has become accustomed to weighing impartially the relevant information and arriving at a fair-minded, objective assessment of the situation.

Feeling refers to the use of subjective, human-oriented values in order to reach conclusions about perceptions. A preference for feeling carries two aspects. Feeling types depend on a subjective system of values defining what is desirable and not desirable. People with feeling judgment are not necessarily recognized by emotionality, but they have usually a well developed capacity for empathy with people and their moods.

A thinking type is able to make decisions in a style which appears more tough, impersonal, and dispassionate than the style of the feeling type, to whom harmony with other people often matters more than cool-headed reasoning about truth and falsity.

In Jung's system the so-called "irrational" processes of sensing and intuition and the "rational" processes of thinking and feeling compose the four orienting functions of the personality. Preference for a particular perceptive function is independent of the judgment preference. Both may combine in various ways with the attitudes of extraversion and introversion.

Jung maintained that one of the four functions becomes dominant by being more strongly developed through practice than the other three. Dominance occurs naturally as a person selects and uses more often a process which is easier, more interesting, or more rewarding than others. The dominant process, either a perceptive or a judging process, is used in the preferred attitude mode of introversion or extraversion.

The authors of the MBTI observed that the behavior patterns of individuals differ, depending on whether they are extraverting a perceptive or a judging process (McCaulley, 1981). The extraverted process of any Jungian type is usually what is most visible. If perception (sensing or intuition) is extraverted, the person creates an impression of adaptability, spontaneity, curiosity, and willingness to absorb considerable information before reaching a decision. If judgment (thinking or feeling) is extraverted, the person creates an impression of organization, dependability, efficiency, and decisiveness. These behavioral indicators can be used to estimate whether a person's dominant function is a perceptive or a judging one. Of the two functions, perception and judgment, the dominant one for the introvert will be the one which is not extraverted. The extravert, on the other hand, will extravert the dominant process. Myers (1962-1975), therefore, proposed including the dimension of perception versus

judgment on the MBTI in order to identify the dominant function. This pair of opposites is implied, but not explicated, in Jung's theory (Myers, 1962-1975).

In addition, Myers (1962-1975)concluded from Jung's descriptions that the personality process preferred secondly, called the auxiliary function, serves the purpose of balancing the individual against one-sided psychic development. The auxiliary process is used in the attitude mode opposite to that in which the dominant process is used. For example, an extraverted judging type with thinking and intuition (ENTJ) would extravert with thinking and introvert with intuition. If the dominant process is a perceptive function, then the auxiliary process must be one from the judgment dimension. For example, a person with dominant sensing (such as types ESFP or ISTJ) will have either thinking or feeling as a second best process.

The fourth or "inferior" function is the preference opposite to the dominant function. A feeling dominant type, for example, will have inferior thinking. Jung believed that the fourth function remains the slowest and most primitive process to become developed and integrated into awareness (Von Franz & Hillman, 1971). However, because the inferior function acts as a bridge to unconscious processes, it may provide important clues to the special difficulties that any particular type may have.

An example of one profile from the MBTI is ENTJ. The letters represent extraversion, intuition, thinking, and judgment. This extraverted person has developed characteristics associated with the judging mode. As the dominant process is the one most visible for extraverts, in this type thinking is dominant. The auxiliary function of intuition is used in the inner world of reflection; the person introverts with intuition. Feeling, the process which remains least developed, is the inferior function for this type. The combination of interacting preferences, not their simple addition to one another, creates the particular quality of the ENTJ type's personality.

Good (mature) type development means that an individual feels confident in the command of dominant and auxiliary functions, can employ perception and judgment in the appropriate situations, and can confront comfortably the less preferred functions and attitudes. Whether a person has achieved maturity of type cannot be determined from the strength of the type preference scores on the MBTI. A second level of the MBTI is being constructed at present in order to provide researchers with an estimate of type development.

CHAPTER THREE
METHODOLOGY

> To know is nothing at all; to imagine is everything. (France, quoted in Lindauer, 1983, p. 468)

Research Questions

As shown in the review of literature, many descriptive investigations have been conducted which explore imaginative abilities together with other personality variables but few which compare the two variables of interest of fantasy style and Jungian personality type. Because the topic of fantasy has been investigated so recently, not enough information has been accumulated to formulate research hypotheses that predict a specific direction of association between daydream style and Jungian type. The present study addresses this problem.

These research questions were the main focus of the study:

1) Do persons representing the 16 different composite types from the Myers-Briggs Type Indicator (a test of Jungian types) differ significantly on the 3 daydreaming style scores yielded by reports on the Short Imaginal Processes Inventory (a questionnaire on fantasy activity)?

2) Do persons representing each choice between the four pairs of dichotomous preferences on the MBTI differ significantly on the three SIPI daydreaming style mean scores?

3) Are MBTI preference scores correlated significantly with SIPI scores?

4) Are there differing patterns between males and females in the way their SIPI daydreaming style scores are related to MBTI composite types and preferences?

5) Are there significant differences in the way persons representing the different MBTI composite types respond to each item on the SIPI?

6) Are there significant differences in the way persons representing different MBTI preferences respond to each item on the SIPI?

7) Are MBTI preference scores correlated significantly with SIPI item responses?

8) Are there differing patterns between males and females in the way their responses to the SIPI items are related to MBTI composite types and preferences?

The research questions may be reformulated in terms of the following null hypotheses tested in this study:

Hypothesis 1:

There will be no significant differences between the 16 MBTI composite types on the 3 SIPI daydreaming style mean scores.

Hypothesis 2:

There will be no significant differences between the three SIPI daydreaming style mean scores for the four pairs of MBTI preferences.

Hypothesis 3:

There will be no significant correlations between MBTI continuous scores for the preferences EI, SN, TF, and JP and SIPI scores for the three daydreaming styles.

Hypothesis 4:

There will be no difference between males and females in the pattern or extent of relationships found in the three investigations of a) MBTI composite type and SIPI mean scores, b) MBTI preferences and SIPI mean scores, and c) MBTI continuous preference scores and SIPI scores.

Hypothesis 5:

There will be no difference in the responses of persons representing the 16 MBTI composite types to the 45 SIPI items.

Hypothesis 6:

There will be no difference in the responses to the 45 SIPI items by persons representing differing MBTI preferences.

Hypothesis 7:

There will be no significant correlations between MBTI preferences and SIPI item respones.

Hypothesis 8:

> There will be no difference between males and females in the pattern or extent of relationship of SIPI item responses with MBTI composite types or MBTI preferences.

The null hypothesis of no relationship or no difference was rejected if the hypothesis testing showed results significant at least at the .01 level. For all hypotheses (except hypotheses 4 and 8) the .01 and the .001 levels of significance were reported. So many variables were tested in the statistical analyses that the significance level was set particularly high to rule out as much error as possible without losing valuable information. Only on the analyses of variance for the daydream mean scores the significance level of .05 was included in the research report.

Research on fantasy is exploring those aspects of the stream of consciousness which represent uncharted territory. For this reason, it was considered justified in the present study to use a computer program which could compare numerous variables and which could include areas of interest in which expectations would be difficult to formulate on the basis of current research.

At the Center for Applications of Psychological Type (CAPT) in Gainesville, Florida, a standard computer program has been designed for comparing MBTI types and subtypes with other research data. In studies using the MBTI it is

customary to analyze the data for the 16 Jungian types, separate preferences, and for groups of types postulated to have common characteristics. The present research followed the standard MBTI methodology, so that type differences in reported imaginal processes could be compared in the conventional ways.

Subjects

The minimum number of subjects was set at 250 males and 250 females. It was necessary to seek approximately 200 additional subjects in order to set a minimum of 10 subjects for each of the 16 MBTI type categories. Out of about 1,000 students tested, 695 subjects' scores were included in the final sample.

The aim of sampling was to obtain a representation of MBTI type categories as they are generally distributed in college populations. It is known that certain types of students are attracted to particular academic disciplines (Myers, 1962-1975). Therefore, college students were sought first from Santa Fe Community College in Gainesville in order to secure a broad range of type. The Santa Fe students were registered for classes in career development and human development, courses which most freshmen attend before they specialize in a particular field of study. It was found that the type distribution in these classes included more sensing types than in most college

populations. Therefore, additional Santa Fe students from introductory psychology classes were sought, because it is known that psychology courses tend to be attractive for intuitive types. The remaining subjects were sought from University of Florida residence halls. Of these subjects, about half were from East Hall, a residence area in which all students were participants in honors programs. It is known that intuitive types are usually attracted to honors programs (Myers, 1962-1975). The remaining subjects were nonhonors freshmen and sophomores and residence hall assistants who were sophomores or juniors. The university students were distributed among many fields of study.

Of the total sample the number of black students estimated by instructors was less than 25. (On neither questionnaire were subjects asked to specify race.) Students who participated in programs for learning disabilities or who were cited by instructors to have had language comprehension problems were not included in the final sample.

Only subjects in the age range 17 to 27 were accepted for the research. As students were tested in groups, all group members could participate and receive feedback on their scores, regardless of age. For persons in the specified range of young adulthood, it was considered that the SIPI and the MBTI were robust to small changes in age. Both inventories have been used with college students, and

many of the normative data for both were gathered from freshmen and sophomores. Eighteen-year-old students comprised the majority of the Santa Fe and university groups.

Instrumentation

The Short Imaginal Processes Inventory. The length of administration time for the full IPI precluded its widescale use in research. Therefore, a condensed form of the same test was developed. In justification of the short version, its authors (Huba et al., 1982) claimed that the three major theoretical constructs, as well as a broad enough selection of items, have been preserved to encompass the most important aspects of inner experience.

Fifteen items representing each of the 3 second-order factors are included in the 45-item Short Imaginal Processes Inventory (SIPI). This item pool is derived from 14 of the original 28 scales and yields a more restricted range of themes than the long IPI. Items have been retained which maximize within-scale homogeneity among items and across-scale orthogonality of items.

College students from the aforementioned study on drug use (Huba et al., 1977a) provided the derivation sample used to confirm that the three style dimensions of the short form replicate the same factors on the long form. Components analyses for separate male and female subgroups showed no

essential differences in the factorial structure across sex (Huba, Aneshensel, & Singer, 1981).

A further analysis of the demographic characteristics of the sample revealed no evidence to suggest that the scores on daydreaming patterns would be largely different among groups differing in age, ethnicity, sex, or socio-economic status. In other words, test results on styles of daydreaming seem to be generalizable for college students roughly comparable to those in the sample. Details of the effects of sex and ethnicity regarding each of the three major styles were discussed in the research report. It is important to note that on the SIPI women score slightly higher than men on positive-constructive daydreaming and on poor attentional control (Huba et al., 1981).

Subjects taking the SIPI provide responses on a five-point scale describing to what extent the item is or is not characteristic of them. An inspection of the items of the SIPI shows that most of the statements deal with contents not far removed from reality, such as "I daydream about winning a prize for my work." Therefore, the face validity of the instrument seems adequate as a measure of daydreaming tendencies. Antrobus, Coleman, and Singer (1967) showed that subjects classified as frequent daydreamers, based on questionnaire responses, actually reported a higher frequency of task-irrelevant thoughts, as well as made more errors during a signal detection task, than subjects

classified as low-frequency daydreamers. This study was followed by others (Gold & Gold, 1982; Gold, Teague, & Jarvinen, 1981; Singer, 1974b; Singer, 1975b), mostly using laboratory procedures, which supported the concurrent validity of responses on self-report inventories about daydreaming. Therefore, there is at least some evidence that data obtained through questionnaires are valid for making statements about actual behavior.

Studies cited previously (Crawford, 1982; Cundiff & Gold, 1979; Giambra & Traynor, 1978; Huba & Tanaka, 1983-1984; Segal, 1974; Segal & Feger, 1973; Segal et al., 1980; Starker & Hasenfeld, 1976; Starker & Singer, 1975) which show relationships between negatively-toned fantasy and negatively-evaluated behavior help to strengthen the concurrent and predictive validity of the IPI. More research is needed to confirm whether styles of daydreaming are valid for predicting other personality traits or behaviors.

The three second-order factors have received consistent validation from a number of factor analyses and replication studies demonstrating their importance as theoretical constructs of inner experience (Crawford, 1982; Giambra, 1974, 1977, 1980; Huba et al., 1977a; Isaacs, 1975; Segal et al., 1980; Singer & Antrobus, 1963, 1972; Starker, 1974a, 1977; Starker & Singer, 1975). These investigations have examined the scales of the IPI both alone and in conjunction with

other measures of personality variables. Among all the studies, the second-order factors appear in very similar form and show stability across different types of samples. These results support the contention of structural consistencies in private, ongoing mentation. Most important, the findings are in accordance with the theoretical statements of Singer (1966) and with the theory of current concerns advanced by Klinger (1971).

The Short IPI was constructed according to the convergent-discriminant validity procedure proposed by Jackson (1971). Items on any one of the three factor scales correlate highly with that scale and, with few exceptions, they correlate minimally with the other two scales.

With regard to reliability, according to the SIPI Manual (Huba et al., 1982),

> Coefficient alphas for internal consistency were .80, .82 and .83 for the Positive-Constructive, Guilt-Fear of Failure, and Poor Attentional Control scale respectively. Woodward and Bentler's (1978) 99 percent confidence statistical lower bound reliability coefficient is .78, .80 and .81 for the three scales respectively. (p. 7)

Test-retest reliabilities for males provided by Giambra (1977) were confirmed also by Cundiff and Gold's (1979) investigation. Both authors supported the reliability and generalizability of IPI scores.

In order to control for acquiescence response set, slightly less than a third of the SIPI items are negatively keyed. Oakland (1968) demonstrated that, in comparison to

some other self-report personality measures, the response set of social desirability plays a less important role in the daydream questions. This may be true because people seldom discuss their daydreams and feel, therefore, uncertain about their social value.

Scores on the daydreaming styles are reported on a simple graph indicating strength of preference with a number that may be compared to the norm for the standarization sample. This number also appears on the graph for each of the three scores.

The SIPI is intended only as a theoretical research tool. No claims are made that the test results represent the full domain of inner experience. However, it has been possible with the research generated from using the full IPI and the SIPI to show that fantasy activity is indeed measurable and that it varies along at least the three major dimensions of thought control, dysphoric content, and constructive daydreaming attitudes (Huba et al., 1982).

The Myers-Briggs Type Indicator

The MBTI Form F is a self-report scale consisting of 114 questions with two (sometimes three or more) choices and 52 word-pair choices. Subjects make the selections which best describe their likes, dislikes, interests, feelings, and behavior. Preferences are set up between pairs of opposites and do not cross dimensions.

The four dimensions or pairs of opposites measured by the MBTI are extraversion-introversion, sensing-intuition, thinking-feeling, judgment-perception. There are 16 type combinations possible as outcomes of the inventory.

Scores are reported either by dichotomies with numbers expressing strength of preference or by continuous scores in which the preference score is added to or subtracted from 100. Details of the test construction and of the revisions of scales and items are available in the MBTI Manual (Myers, 1962-1975), from McCaulley (1981), and from Carlyn's (1977) review of the psychometric properties of the instrument.

As the MBTI was designed to measure the Jungian personality constructs, the question of construct validity has been central to most studies using the inventory. A series of investigations (Caldwell, 1965; Carlson, 1980; Carlson & Levy, 1973; Carskadon, 1979a; Howland, 1971; McCaulley, 1977; Myers & Davis, 1964; Yohay, 1982) have made predictions about specific types, based on descriptions of behavior typical for these types. In all cases the results were in the direction predicted by the theory.

Extensive reports (Conary, 1965; McCaulley, 1977; Myers, 1962-1975) of the type differences in career choice have confirmed that people do choose fields of work and study which match most closely the theoretical expectations for their type. Data on creatively gifted persons (Myers, 1962-1975) showed that the majority among creative achievers

are intuitive types. Validity of single MBTI scales has been demonstrated by correlations of MBTI continuous scores with measures on other psychological tests having similar constructs (Carlyn, 1977; McCaulley, 1978; Myers, 1962-1975). In summary, there is ample evidence for the construct validity of the MBTI. A representative review of validity studies was offered by McCaulley (1981).

Reliability data have been summarized from various sources (Carlyn, 1977; Carskadon, 1977, 1979; McCaulley, 1978; Myers, 1962-1975) by McCaulley (1981). Measures of split-half internal consistency and test-retest reliabilities of both single scales and entire type classifications are generally at adequate levels. Age, achievement level, and intelligence seem to be positive factors in the stability of scores.

The extent to which test subjects retain all four of the dichotomous preferences upon retest ranges from 31% to 61% of the cases from nine samples reported by McCaulley (1981). A shift in a single continuum depends partly on the original strength of preference for that score. Persons with very clear and strong preferences seldom change them. If a change in type occurs, it is most likely to be a shift in only one score which was originally not a strong preference.

Sex differences on the MBTI have been well substantiated for the thinking-feeling preference (Myers,

1962-1975). Slightly more women than men select the feeling preference.

Scores on the four type dimensions, yielding a composite type, reveal people's choices at a certain point in time. For various reasons discussed in detail by Myers (1980), some people may not have an accurate picture of their own natural preferences, or they may be unaware of their actual behavior. They may be unable to use their particular talents in an optimal way.

Data Collection Procedures

In advance of the testing a one-page description of the SIPI was distributed to all students. It included an invitation to answer both the SIPI and the MBTI in return for personalized feedback on the results. In practice, the Santa Fe instructors encouraged their students to fill out the questionnaires as a group project which could be related to the course material. In East Hall the testing sessions were provided in the context of ongoing floor programs with the established purpose of self-exploration and information on personal issues. All the resident assistants had taken the MBTI as part of their training. They were encouraged by the housing authorities to fill out the SIPI during one of their regular residence hall meetings. In summary, nearly all subjects in the study volunteered in a group context. A clear motivational structure was present, and no

additional time outside of a regular class or group meeting needed to be taken. There were very few individuals in any group who refused to fill out the two inventories.

Almost all of the students had some knowledge of the MBTI or at least knew of someone else who had taken the inventory. At Santa Fe the MBTI had been used for several years in career development courses. At the University of Florida the MBTI had been used in several housing projects, particularly with resident assistants and more recently with the honors students from East Hall. The SIPI was not known to any of the subjects, and no one had ever taken the SIPI at any other college or university.

All testing sessions were conducted by the researcher or persons trained by the researcher. Standardized instructions (see Appendix A) for both instruments were followed.

Both questionnaires were distributed to small groups of students who usually were able to complete them both within 1 hour. The MBTI requires about 45 minutes, and the SIPI takes about 10 minutes to fill out.

For students who had not previously answered the MBTI, half answered the MBTI before the SIPI and half answered the SIPI first. Each student signed a release form (see Appendix B) to release MBTI and SIPI scores to the researcher as part of the human subjects approval form which had been obtained before testing had begun.

During the administration of the two inventories, students were reminded again that group sessions would be scheduled later by the researcher to give interested students information about their MBTI and SIPI reports.

The Santa Fe students filled out one of the tests in one class period and the other test in another class period during the same week. The class periods were only 50 minutes, and it was considered important that students should take all the time they needed to complete the questionnaires. If the students needed more time for the MBTI, they were allowed to hand it in to the instructor the next day. In practice, nearly all students completed the SIPI and the MBTI in the time provided. If students were absent on the day of testing, they could take the inventories in another class session or between classes, as long as the researcher was present on the campus. No student was allowed to take home the SIPI to fill it out, but at least 10 students at Santa Fe took home the MBTI to fill it out overnight, and at least 10 resident assistants completed the MBTI individually at their own apartments. All other subjects were tested in a regular class period or group meeting.

Some of the subjects already had taken the MBTI before taking the SIPI. Only students who had completed the MBTI within 12 months of filling out the SIPI were included in the subject pool. Most subjects completed both tests within

2 weeks, and approximately 100 students filled them out on the same day.

All subjects were asked to place their name and age on each questionnaire. They were not asked for any other demographic information such as ethnic background or race. If an item was accidentally left out on the SIPI, it was returned to the subject for completion, so that there were no missing data on the SIPI.

Research Measures

First, the scores on the MBTI were recorded for each subject. The four nominal preferences, such as introversion or extraversion, were specified each with a number indicating strength of preference within the given range on the test for each preference. The four preferences for each subject were arranged as the sixteen possible composite types.

Preference scores were converted to continuous rather than dichotomous scores, following the convention in the MBTI Manual (Myers, 1962-1975). In addition, the dominant function for each composite type was recorded.

Second, the numbers indicating strength of choice on the three daydreaming styles of positive-constructive, guilty-dysphoric, and poor attentional control were listed for each subject. Also, the numerical, coded response to each of the 45 SIPI items was recorded for each subject.

Information set for analysis included subject identification, sample group code (Santa Fe, East Hall, or residence halls), sex, age, MBTI preference scores, SIPI style scores, SIPI item scores, and dominant MBTI function.

Sex differences were assumed to influence the results of the present investigation. Many studies of cognitive style and creativity reviewed in the second chapter substantiated differences in research outcomes for males and females. Therefore, the data in this study were analyzed separately for males and females.

Data Analysis Procedures

Before the data were analyzed for type differences in fantasy activity, it was necessary to examine whether or not the subject pool for this research could be considered representative for other college student populations. Two analyses, which used the standard computer program designed for MBTI research, were carried out to compare the present sample with other research samples. The MBTI scores for this sample were compared with 1972 University of Florida freshmen and a 1985 American college freshmen aggregate group. The SIPI mean scores were compared by inspection with the mean scores on the three daydreaming styles in the SIPI standardization sample. The results of these investigations were reported before the other data analyses because they dealt with the composition of the subject pool.

There were two main ways in which the data were analyzed for personality type differences in fantasy activity. First, the three daydreaming styles were analyzed for type differences. Second, the separate 45 SIPI items were analyzed for type differences.

Analyses of SIPI Daydreaming Styles

The first group of analyses examined differences by MBTI personality type in the mean scores for the three SIPI styles of positive fantasy, negative fantasy, and distractibility. This procedure included

1) the ranking of the 16 MBTI types by mean SIPI scores,
2) a one-way analysis of variance of differences in mean SIPI scores for the 16 types,
3) t-tests of differences in mean SIPI scores for the MBTI preference score pairs--EI, SN, TF, and JP.
4) all of the above analyses repeated separately for males and females,

Significance levels of .05, .01, and .001 were reported for the t-tests and analyses of variance.

Next, chi square analyses were conducted which used SIPI mean scores, MBTI composite types, and MBTI preferences. This procedure included

1) for each of the three daydreaming styles, a comparison of the observed frequencies of MBTI composite types to the expected frequencies of those types for the sample,
2) for each of the three daydreaming styles, a comparison of the observed frequencies of MBTI preferences--EI, SN, TF, and JP--to the expected frequencies of those preferences for the sample,
3) both of the above analyses repeated separately for males and females.

For these data analyses the Selection Ratio Type Table (SRTT) program (Allen & Kainz, 1976) was used. The SRTT program, developed under the guidance of MBTI author Isabel Briggs Myers, compares type distributions of the subsamples of a population with the distribution of types for the total population. The SRTT program is used to calculate a series of 2 x 2 contingency table analyses. The ratio of expected to observed frequencies is computed for each composite type, for each preference, and for each of the commonly studied groupings relevant for research with the MBTI. The chi square statistic is used, and if the number of subjects in a cell is too few for the chi square computation, a Fisher exact probability test is computed instead. Results are described for the .05, .01, and .001 level of significance. In the present study results from analyses with the SRTT

program were reported only for significance levels of at least .01.

In addition to the above analyses, the Pearson product-moment correlation was used to compute correlations of MBTI continuous preference scores with the distribution of scores for each of the three SIPI styles. A significance level was recorded for each correlation, but only those which reached the .001 level of significance were described in the research report.

The computer programs used for MBTI data included the convention to report the results of statistical analyses for a number of subtype categories--combinations of preferences--of interest to MBTI researchers. There were 20 two-preference combinations, and there were 8 three-preference combinations representing the original Jungian types. These particular subgroups were not related to the research hypotheses for this study. However, the results of analyses including the subgroups are reported in the appendices for this study in order to be consistent with other MBTI research.

Analyses of the SIPI Items

The second group of analyses examined differences by MBTI personality type in responses to the 45 SIPI items. This procedure included

1) chi square analyses to compare the frequencies of subjects classified by MBTI composite types to the expected frequencies of such subjects who either endorsed or did not endorse each of the 45 SIPI items,

2) chi square analyses to compare the frequencies of subjects classified by MBTI preferences to the expected frequencies of such subjects who either endorsed or did not endorse each of the SIPI items,

3) Pearson correlations of MBTI continuous preference scores with SIPI scores,

4) the above analyses repeated separately for males and females.

Significance levels of .01 and .001 were reported for the chi-square analyses. For the correlations a significance level of .001 was reported.

Individual responses to the SIPI items are set up on a 5-point scale along which the subjects report how much they estimate the item to be characteristic or uncharacteristic for them. The SIPI Manual (Huba et al., 1982) did not provide item response distributions, so it was not possible to compare the present sample with the standardization sample on this aspect of the data. The data were divided by the median score. Those subjects above the median were

considered to have endorsed the item, and those below the median were considered not to have endorsed the item.

For each of the 45 SIPI items, a comparison using the SRTT program was made of the type distribution of students considered to have endorsed and students considered not to have endorsed the item to the type distribution of students in the total sample. These two analyses were conducted with the expectation that in most cases they would balance each other. For example, if extraverts were found significantly more often among the endorsers, then introverts were expected to be found significantly more often among the nonendorsers.

Computations for the analyses were performed using the Selection Ratio Type Table (SRTT) program described earlier. The null hypothesis for these analyses assumes that the type distribution of any subsample drawn from a total sample is not significantly different from the total sample from which it is drawn. In this case, for example, if type is unrelated to fantasy in males, then the distribution of male students endorsing an item will not be significantly different from the distribution of all male students.

CHAPTER FOUR
DATA ANALYSIS

> For life is at the start a chaos in which one is lost. The individual suspects this . . . terrible reality, and tries to cover it over with a curtain of fantasy, where everything is clear. (Ortega, 1957, pp. 156-157)

Introduction

The purpose of this study was to investigate a part of the stream of consciousness concerned with particular aspects of cognitive style. Specifically, the imaginal processes of college students reported on the Short Imaginal Processes Inventory were compared with the Jungian personality types reported by the students on the Myers-Briggs Type Indicator.

Description of the Sample

The subjects for this study included 695 college students, 305 males and 390 females. There were 576 community college students, and 119 university students. The modal age for the subjects was 18 years old, and 90% of the subjects ranged in age from 18 to 22 years.

Table 1 reveals how many subjects were included from each of the three groups in which they were sought to participate in the investigation.

Table 1

Composition of Subject Pool

	Males	Females	Total
Community college	240	336	576
Residence halls	25	30	55
Honors hall	40	24	64

Preference scores on the MBTI involve the four scales extraversion-introversion (EI), sensing-intuition (SN), thinking-feeling (TF), and judgment-perception (JP). Table 2 shows the selection of these preferences.

Table 3 displays the frequencies of the 16 MBTI types. In looking at the data by sex, it may be noted that the males were more often thinking types than the females and the females were more often feeling types than the males. The three most commonly occurring types were ENFP, ESTJ, and ESFJ.

Appendix C indicates the frequencies of the dominant functions of subjects in this sample. Appendix D indicates the frequencies of the eight original Jungian types.

Table 2

Selection of MBTI Preference Scores

Preference	Males		Females		Total	
	N	%	N	%	N	%
E	166	54.4	233	59.7	399	57.4
I	139	45.6	157	40.3	296	42.6
S	168	55.1	239	61.3	407	58.6
N	137	44.9	151	38.7	288	41.4
T	197	64.6	122	31.3	319	45.9
F	108	35.4	268	68.7	376	54.1
J	135	44.3	188	48.2	323	46.5
P	170	55.7	202	51.8	372	53.5

The contributions of different personality types from three different sources of subjects were consistent with theoretical expectations for those sources, according to MBTI type theory (Myers, 1962-1975). The community college students contributed the largest proportion of sensing types--thereby reflecting the larger proportion of sensing than intuitive types in most noncollege populations. The university residence halls, from which many of the subjects had the administrative position of resident assistant, contributed the largest proportion of extraverted judging types. These types of students are known to be attracted to administrative roles. And the honors hall contributed the largest proportion of introverted intuitive types. These

Table 3

Frequency of MBTI Composite Types

Type	Males		Females		Total	
	N	%	N	%	N	%
ISTJ	34	11.1	21	5.4	55	7.9
ISFJ	9	3.0	39	10.0	48	6.9
INFJ	6	2.0	8	2.1	14	2.0
INTJ	16	5.2	5	1.3	21	3.0
ISTP	24	7.9	16	4.1	40	5.8
ISFP	13	4.3	27	6.9	40	5.8
INFP	19	6.2	28	7.2	47	6.8
INTP	18	5.9	13	3.3	31	4.5
ESTP	27	8.9	15	3.8	42	6.0
ESFP	15	4.9	32	8.2	47	6.8
ENFP	26	8.5	54	13.8	80	11.5
ENTP	28	9.2	17	4.4	45	6.5
ESTJ	33	10.8	27	6.9	60	8.6
ESFJ	13	4.3	62	15.9	75	10.3
ENFJ	7	2.3	18	4.6	25	3.6
ENTJ	17	5.6	8	2.1	25	3.6
Total	305		390		695	

types of students are known to be found often in college honors programs.

Comparison of MBTI Types to Normative Samples

A major concern for this study was whether the sample could be assumed to be representative for college students in general. Data from two other large samples of college student MBTI subjects were available from the data bank at the Center for Applications of Psychological Type. Using the Selection Ratio Type Table program, the present sample was compared first to 2,514 University of Florida (U.F.) 1972 freshmen. Then the sample was compared to an aggregate base of 5,844 1983 college freshmen from all over the United States. The results of the comparisons of the sample to the two separate bases were noted for the significance level .001 ($p = .001$).

An examination of the data revealed that the subjects in the present sample reported MBTI preferences very similar to those of the other college students to whom they were compared. Appendix E displays the percentages of MBTI preference selections for this sample in comparison to the percentages of these selections for the other two samples of college students. In both comparisons there were less than 25% more thinking types in the present sample than expected when compared to other MBTI samples.

In comparing males and females within this sample for differences in MBTI preference selections, it was found that there were significantly more male thinking types and significantly more female feeling types than expected when preference frequencies for each sex were compared to those for the total sample. This result is in agreement with the findings of other MBTI research (Myers, 1962-1975) that, in general, slightly more males than females prefer thinking and slightly more females than males prefer feeling.

Comparison of SIPI Scores to Standardization Sample

On the SIPI the mean scores for males, females, and the total sample on each of the three daydream styles are presented in Table 4. The positive-constructive, guilty-dysphoric, and poor attentional control styles were shortened to the labels positive, negative, and distractibility. Both positive and negative styles in this study had higher means (by several scale points) than the means for the SIPI standardization sample, while the mean for distractibility was roughly the same. No statistical analyses for significance of differences were performed with these data because the exact composition of the standardization sample for the SIPI (freshmen from a large private northern university and a large southern state university) was not well enough known to formulate meaningful conclusions about the differences in the two samples. Furthermore, no local norms for other

Table 4

Mean Scores of Daydreaming Styles

		Males	Females	Total	Standarization Sample
Positive	M	54.397	55.536	55.036	49.51
	SD	7.60	7.68	7.66	9.44
Negative	M	38.534	36.323	37.294	33.98
	SD	8.14	8.38	8.34	10.35
Distractibility	M	46.666	47.369	47.06	47.85
	SD	9.41	9.19	9.29	10.35

samples of Gainesville college students who had taken the SIPI were available for comparison. The fact that females in this sample scored slightly higher than males on positive daydreaming and poor attentional control is consistent with previous SIPI findings (Huba et al., 1982) already pointed out in the chapter on methodology.

Summary of Sample to Norms Comparisons

In summary, the MBTI types in this sample were reasonably representative for college students. There were no salient or unusual characteristics of the college students in this sample which would render the MBTI data invalid for generalization to other college students. The SIPI scores for this sample were close to the standardization norms for the style of distractibility, but the other two styles of positive and negative fantasy were found to be higher than the norms for the standardization sample.

Results of Hypotheses Testing

The research hypotheses are restated below, followed by a brief description of the results of testing each hypothesis. Thereafter, the details of the data analysis are described and tables are provided to clarify the results of the analyses.

Hypothesis 1

There will be no significant differences between the 16 MBTI composite types on the 3 SIPI daydreaming styles of positive fantasy, negative fantasy, and distractibility.

The results of testing did not support this hypothesis, and it was rejected at the .01 level of significance. That is, significant differences were found between the 16 MBTI composite types on the SIPI daydreaming styles of positive fantasy and distractibility. However, no significant relationship was found for negative fantasy with MBTI composite types in this study.

A one-way analysis of variance was conducted to compare the 3 mean daydreaming style scores with each of the 16 composite types. This analysis yielded the F-ratios in Table 5.

Table 6 provides the rankings on positive fantasy of the 16 MBTI types from highest (1) to lowest (16). The number of subjects who fell into a type category and the percent of the sample which that number represented are indicated in the table.

With the one exception of the fifth-ranked ESTP type, the nine higher ranking types were all intuitive types, and the seven lower ranking types were, without exception, sensing types.

Table 5

F-ratios for SIPI Mean Score Comparisons with 16 MBTI Composite Types

SIPI Style	F-ratios		
	Totals	Males	Females
16 types	df 15/680	df 15/290	df 15/375
Positive Fantasy	2.28*	1.59	1.89
Negative Fantasy	1.06	1.73	.31
Distractibility	4.25*	2.63*	3.12*

*p = .01

Table 7 shows the rankings on negative fantasy for the 16 MTBI types. An inspection of these rankings suggests that introverts and intuitives in this study were more common than extraverts and sensing types among the higher ranking types. However, there were no strikingly clear or significant patterns for any of the types. Some types showed large discrepancies in rankings by sex (see ISTP, for example).

Table 8 provides the same information for the style of distractibility as Tables 6 and 7. The four highest-scoring types were all introverts with perception. The thinking types with judging all fell into the lower half of the table.

Table 6

Type Rankings for Positive Fantasy

Rank	Type	N	%	Rank	
				M	F
1	INFJ	14	2.014	1	8.5
2	ENFP	80	11.511	3	3
3	ENFJ	25	3.597	2	5
4	ENTP	45	6.475	5	2
5	ESTP	42	6.043	9	4
6	INTP	31	4.460	12	1
7	ENTJ	25	3.597	4	8.5
8	INFP	47	6.84	8	6
9	INTJ	21	3.022	6	14
10	ESFJ	75	10.791	7	11
11	ISTP	40	5.755	10	13
12	ESTJ	60	8.633	11	12
13	ESFP	47	6.763	16	10
14	ISTJ	55	7.914	14	7
15	ISFP	40	5.755	13	15
16	ISFJ	48	6.906	15	16

Table 7

Type Rankings for Negative Fantasy

Rank	Type	N	%	Rank	
				M	F
1	ENTJ	25	3.597	3	3
2	INFP	47	6.763	1	4.5
3	ENTP	45	6.475	6	2
4.5	ISTJ	55	7.914	5	14
4.5	INTP	31	4.460	4	13
6	ESFP	47	6.763	2	12
7	INFJ	14	2.014	7	6
8	ISTP	40	5.755	12	1
9	ISFP	40	5.755	11	4.5
10	ESFJ	75	10.791	9	7
11	ESTJ	60	8.633	10	15
12	ENFJ	25	3.597	13	8
13	ENFP	80	11.511	15	9
14	ESTP	42	6.043	14	10
15	INTJ	21	3.022	16	11
16	ISFJ	48	6.906	8	16

Table 8

Type Rankings for Distractibility

Rank	Type	N	%	Rank	
				M	F
1	INFP	47	6.763	1	3.5
2	ISFP	40	5.755	5	2
3	ISTP	40	5.755	6	1
4	INTP	31	4.460	3	9
5	ENFP	80	11.511	8	3.5
6	ESFP	47	6.763	4	6
7	INFJ	14	2.014	2	14
8	ISFJ	48	6.906	7	7
9	ESFJ	75	10.791	9	8
10	ENTP	45	6.475	12	5
11	ISTJ	55	7.914	11	11
12	ENTJ	25	3.597	10	15
13	ESTP	42	6.043	14	10
14	ESTJ	60	8.633	15	13
15	ENFJ	25	3.597	16	12
16	INTJ	21	3.022	13	16

Hypothesis 2

There will be no significant differences between the four pairs of MBTI preferences on the three SIPI daydreaming styles of positive fantasy, negative fantasy, and distractibility.

The results of testing did not support this hypothesis except as it pertained to the style of negative fantasy. For the subjects in this study significant (p = .01 and p = .001) differences were found between MBTI preferences on two of the three SIPI daydreaming styles. Thus, this hypothesis was rejected.

T-tests were conducted to compare the three mean daydreaming style scores with each of the pairs of preferences--extraversion-introversion (EI), sensing-intuition (SN), thinking-feeling (TF), and judgment-perception (JP). Degrees of freedom were 1/693.

While the thinking-feeling dimension did not seem relevant to positive fantasy, the analyses for the other three preference dimensions yielded significant relationships for this style. Extraversion (p = .01), intuition (p = .001), and perception (p = .01) were found related to positive fantasy on the self-reports of the subjects in this study. Table 9 reveals the results of the t-tests, and Table 10 shows the significance levels for the preferences--extraversion, intuition, and perception--associated with postive fantasy.

No significant relationships were found between MBTI preferences and negative fantasy. Possible reasons for this finding are discussed in the final chapter.

Table 9

Results of t-tests for Preference Pairs Associated with Positive Fantasy

Preference	M	SD	T
E	55.65	7.8	6.24**
I	54.19	7.3	
S	53.91	7.5	21.49***
N	56.61	7.6	
T	54.84	7.7	0.36
F	55.19	7.5	
J	54.46	7.7	3.37**
P	55.53	7.5	

**p = .01. ***p = .001.

Table 10

Significance Levels of t Values for Preferences Associated with Positive Fantasy

Preference	Males	Females	Total Sample
E	---	.01	.01
N	.01	.001	.001
P	---	.01	.01

Introversion (p = .001), feeling (p = .001), and perception (p = .001) were found related to distractibility on the self-reports of subjects in this study. Table 11 reveals the results of the t-tests, and Table 12 shows the significance levels for the preferences--introversion, feeling, and perception--associated with distractibility.

Table 11

Results of t-tests for Preference Pairs Associated with Distractibility

Preference	M	SD	T
E	46.01	9.3	12.18*
I	48.47	8.9	
S	46.71	9.1	1.34
N	47.54	9.5	
T	45.57	9.3	15.36*
F	48.31	9.0	
J	45.19	9.4	25.11*
P	48.67	8.8	

*p = .001.

Hypothesis 3

There will be no significant correlations between MBTI continuous scores for the preferences EI, SN, TF, and JP and SIPI scores for the three daydreaming styles.

The results of testing did not support this hypothesis except as it pertained to the style of negative

Table 12

Significance Levels of t Values for Preferences Associated with Distractibility

Preference	Males	Females	Total Sample
I	.001	.01	.001
N	.05	--	--
F	.01	.01	.001
P	.01	.001	.001

fantasy. On the self-reports of the subjects in this study, significant (p = .02, p = .01, and p = .001) relationships were found between MBTI preferences and two of the three SIPI styles. Thus, this hypothesis was rejected.

Pearson product-moment correlations were computed between MBTI preferences (arranged as continuous scores) and SIPI scores. Table 13 provides the correlation coefficients for males and females. In the conventional computation for continuous MBTI scores, a negative coefficient indicates preferences for E, S, T, or J; a positive coefficient indicates preferences for I, N, F, or P.

The outcomes of the correlational investigation were all coefficients of low magnitude. However, they confirmed the same direction of associations found in the t-tests previously described (which had involved SIPI mean scores and MBTI preference pairs).

Table 13

Correlation Coefficients of Fantasy Style Scores with MBTI Preference Scores

Style	EI		SN		TF		JP	
	M	F	M	F	M	F	M	F
Positive	-0.0718	-0.1151**	0.1903***	0.2433***	0.0448	-0.0079	0.0695	0.1031*
Negative	0.0849	-0.0033	-0.0242	0.0196	0.0218	0.0198	-0.0205	0.0530
Distracti-bility	0.1639**	0.1020*	0.0572	0.0909	0.2342***	0.1256**	0.1678**	0.2428***

*p = .02. **p = .01. ***p .001.

For females only, positive relationships were found for extraversion ($p = .01$), intuition ($p = .001$), and perception ($p = .02$) with positive fantasy. No relationships were found for MBTI preferences and negative fantasy. Positive relationships were found for feeling ($p = .01$) and perception ($p = .001$) with distractibility.

For males only, a positive relationship was found for intuition ($p = .001$) with positive fantasy. No relationships were found for MBTI preferences and negative fantasy. Positive relationships were found for introversion ($p = .01$), feeling ($p = .001$), and perception ($p = .01$) with distractibility.

In summary, positive fantasy was found correlated positively with extraversion, intuition, and perception. Negative fantasy was found unrelated to MBTI preferences. Distractibility was found correlated positively with introversion, feeling, and perception. These findings confirm the results of the other analyses in this study.

Hypothesis 4

There will be no differences between males and females in the pattern or extent of relationship found in the three investigations of a) MBTI composite type and SIPI mean scores, b) MBTI preferences and SIPI mean scores, and c) MBTI continuous preference scores and SIPI scores.

An inspection of the tables for reporting the results of this study reveals that this hypothesis could not be supported since there were differences in the results of data analyses between males and females. Thus, this hypothesis was rejected.

Table 5 reveals that males and females differed by composite type on SIPI mean scores. Tables 6, 7, and 8 display the differing order for the ranks of MBTI composite types for males and females on the three SIPI types.

Tables 10 and 12 reveal that males and females differed by MBTI preferences both in the patterns and in the extent (significance level) to which these preferences were associated with positive fantasy and with distractibility.

Table 13 shows that males and females in this study differed by MBTI preferences in both the patterns and in the extent (significance level) to which these preferences were correlated with positive fantasy and with distractibility.

In summary, a simple inspection of the three investigations, specified above, confirmed that results were different in pattern and extent of relationship between the males and females in this study.

Hypothesis 5

There will be no difference in the responses of persons representing the 16 MBTI composite types to the 45 SIPI items.

The results of testing did not support this hypothesis. Some of the subjects representing the composite types were found to respond by endorsing or not endorsing the items at significance levels of .01 and .001. Thus, this hypothesis was rejected.

The Selection Ratio Type Table (SRTT) program was used to investigate the SIPI items for relationship to MBTI composite types. As previously described, the SRTT program uses the chi square statistic (or the Fisher exact probability test, if the number of subjects does not meet requirements for the chi square computation). Responses to the SIPI items were divided at the median of the distribution for the five possible response categories. High scorers were considered endorsers, and low scorers were considered nonendorsers of the items.

First, the frequencies of endorsers were compared to the expected frequencies of endorsers by MBTI composite type for this sample. Second, the frequencies of nonendorsers were compared to the expected frequencies of nonendorsers by MBTI composite type for this sample.

It was found that on 19 of the 45 items there were subjects of at least 1 of the 16 possible composite types (either males or females) who responded to the item with significant (p = .01 and p = .001) endorsement or nonendorsement. Table 14 reveals which SIPI items were found associated with MBTI composite types.

Table 14

MBTI Composite Types, References, and Subgroups Endorsing and Not Endorsing SIPI Items

Item	True (T) or Untrue (U)	M	F
1. Original idea can develop from a fantastic daydream.	T	N	ENFP*,N*, NF*,NP, EN*
	U	S,SJ*	S*,SF*,FJ
*2. Do not really "see" objects in a day-dream.	T	S	IJ*
	U	N,NJ	--
3. Answer to problem comes in daydream.	T	TP*	--
	U	--	--
4. Picture myself in future.	T	P	--
	U	J,EJ*,SJ	--
5. Fantasies provide pleasant thoughts.	T	E	N,NF
	U	ISTJ,I,IJ	ISFJ,S,SF
6. Sounds in daydreams are clear and distinct.	T	--	ISFJ
	U	--	--
*7. Daydreaming never solves problems.	T	--	S*,IS
	U	--	N*,EP,NP*, EN
8. Daydreams are stimulating and rewarding.	T	ESFP	N,P,EP*,NP
	U	--	S,J,SJ,IS
*9. Seldom think what I will do in future.	T	--	--
	U	--	--
10. Daydreams offer useful cues to tricky situations.	T	EN	--
	U	--	--
11. Pictures in my mind are clear as photos.	T	--	--
	U	--	--

Table 14. Continued.

Item	True (T) or Untrue (U)	M	F
12. Daydreams often leave a warm, happy feeling.	T U	NF --	N,EP S,IS*
*13. Daydreams have no practical significance.	T U	S,SJ INFP*,N, NF*,NP	S,SF N,EP,NP
14. Daydream what I'd like to see happen in future.	T U	-- --	-- --
15. Daydreams are worthwhile and interesting.	T U	ENFP,NF --	-- IS
16. Have fantasy of being caught lying to friend.	T U	-- --	-- --
17. See self as expert.	T U	-- --	-- --
18. Imagine failing those I love.	T U	-- --	-- --
19. Dayreams contain depressing events.	T U	-- --	-- --
20. Show anger to enemies in fantasy.	T U	-- --	-- --
21. Imagine self not completing job.	T U	-- --	-- TJ
22. Get angry in daydreams.	T U	-- ENFP*	-- --
23. Afraid of being caught doing wrong.	T U	-- --	-- --

Table 14. Continued.

Item	True (T) or Untrue (U)	M	F
24. Receive award	T	--	ISTJ
	U	--	--
*25. Unpleasant day-dreams do not bother me.	T	--	--
	U	--	EP
26. Fear meeting new responsibilities.	T	--	--
	U	--	NT
27. Imagine getting revenge.	T	--	ISTP,IP
	U	--	--
28. Accepted in successful organization.	T	--	ISTJ,T*, ST,TJ
	U	--	F*,SF
29. Feel guilty to escape punishment.	T	--	--
	U	ESTJ	--
30. Never panic from daydreaming.	T	--	--
	U	--	ESFJ
31. Interested in what I'm doing.	T	--	INTJ
	U	ISTP,IP	--
32. My thoughts wander.	T	N,NP,FP	P*,IP*, NF,NP,FP
	U	ESTP,S,ST	J,SJ
*33. My mind seldom wanders from work.	T	S*,ST, SJ,ES	ISJ,S*, J*,SJ,ST, SJ,TJ,ES
	U	INTP*,N*, NT*,NP*,IN	ENFP,N*, P*,IP,NF*, NP*,FP,IN, EN
34. Lose interest easily.	T	IP,I	P*
	U	E	J*

Table 14. Continued.

Item	True (T) or Untrue (U)	M	F
*35. Not easily distracted.	T	S*,T,ST, SJ*	J,EJ,SJ, TJ*,ES*
	U	N*,F,NF*, FP	ENFP,P*, IP,NF,NP*, FP
36. Concentration not impaired by talk nearby.	T	--	--
	U	NF	--
37. Unrelated thoughts creep into work.	T	--	--
	U	--	--
38. Can work at task a long time.	T	ESTJ,J,EJ	--
	U	P,FP	FP
39. Facing a tedious job, notice other things.	T	--	P,NP,FP
	U	--	J,IJ,NJ,FJ
40. Get bored easily.	T	P,IP	P*,IP*, SP*,FP*, ISFP,INFP
	U	J	E,J*,SJ, FJ,ESFJ
41. Hard to read with phone talk nearby.	T	EN	N,NP,IN
	U	SF	S,SF,SJ,FJ
*42. Seldom bored.	T	--	J,EJ,FJ
	U	--	IP
43. Hard to concentrate with TV or radio on.	T	--	--
	U	--	--
*44. Thoughts seldom drift.	T	--	J*,EJ,SJ
	U	IP	P*
45. Difficulty concentrating.	T	IP	ISTP,P, IP*,FP
	U	--	J

Note: All MBTI reports at $p = .01$, except *$p = .001$. For total sample see Appendix G.

Table 14 provides the results of the SRTT analyses. All items are paraphrased briefly. The items which were worded negatively are marked with an asterisk; there were four negatively worded items for positive fantasy, two for negative fantasy, and seven for distractibility. This table indicates which MBTI composite types, preferences, and standardly investigated type combinations were found to be associated with each SIPI item. The results were reported for the .01 level of significance. Those MBTI data with a star in the table were found significant at the .001 level. The item numbers are the variable numbers for this study (not item numbers on the inventory). Items 1-15 were those for positive fantasy; items 16-30 were those for negative fantasy; items 31-45 were those for distractibility.

Appendix F provides in detail the chi square ratios for the SRTT analyses for each item. The significance levels of .01 and .001 are reported in this appendix. Negatively worded items, for which a response of endorsing the item indicated a low score on that respective style of fantasy, are given asterisks in the table. Both responses of endorsement and nonendorsement are provided. The item numbers match those of the paraphrased items in Table 14. In addition, this appendix specifies from which of the long IPI scales the item was derived. For the styles of positive and negative daydreaming each, there were five different sorts of questions, and for the style of poor attentional control

(distractibility) there were three sorts of questions from the long form of the IPI.

Table 14, Appendix F, and Appendix G provide the results of the SRTT data analyses for the MBTI subtype categories which conventionally are compared by the SRTT program. The subtype categories provide a detailed examination of the results of the data analyses, although they are not included in the research questions or hypotheses.

Hypothesis 6

There will be no difference in the responses to the 45 SIPI items by persons representing different MBTI preferences.

The results of testing did not support this hypothesis. Some of the subjects representing the MBTI preferences were found to respond by endorsing or not endorsing the items at the .01 and .001 level of significance. Thus, this hypothesis was rejected.

The SRTT program was used to investigate the SIPI items for relationship to MBTI preferences. The procedure for the analyses was identical to that described above for the MBTI composite types. Table 14 reveals which of the 20 out of 45 SIPI items were found associated with MBTI preferences.

Hypothesis 7

There will be no significant correlations between MBTI preferences and SIPI item responses.

The results of testing did not support this hypothesis. For the subjects in this study low but significant ($p = .001$) correlations were found between item responses and MBTI preferences. Out of the 45 items there were 26 found to be correlated positively with preferences for introversion, intuition, feeling, and perception. Thus, this hypothesis was rejected.

Pearson correlations of SIPI scores to MBTI continuous scores were computed. In Table 15 the correlation coefficients ($p = .001$) for SIPI items associated with MBTI preferences are reported. Item 28 was found to be an exception to the other responses to negative fantasy items. Females who preferred the thinking function endorsed this question, whereas no other significant correlations were found of any other SIPI items with the thinking preference. Otherwise, the results of the correlational analyses confirmed in general the direction of relationship (of SIPI items to MBTI preferences) found in the SRTT comparisons of SIPI items by MBTI preferences.

Table 15

Significant Correlation Coefficients of SIPI Item Scores with MBTI Preference Scores

SIPI Item	MBTI males	SIPI Item	MBTI females
22	I (.1721)	42	I (.2039)
1	N (.1854)	1	N (.2846)
2	(.1893)	7	(.1918)
13	(.1896)	8	(.2051)
15	(.1951)	13	(.1727)
33	(.2184)	15	(.1543)
		17	(.1527)
45	F (.2184)	28	T (-.1636)
35	(.1988)		
37	(.1906)		
32	P (.1786)	32	P (.1623)
42	(.1939)	33	(.2175)
		34	(.2972)
		35	(.2107)
		38	(.1628)
		39	(.2276)
		40	(.2598)
		45	(.1552)

$p = .001$.

Hypothesis 8

There will be no differences between males and females in the pattern or extent of relationship of SIPI item responses with MBTI composite types or MBTI preferences.

An inspection of Table 14 reveals that this hypothesis could not be supported since there were differences in the item responses between males and females according to MBTI composite types and MBTI preferences on the self-reports of

the subjects in this study. Thus, this hypothesis was rejected.

As described above, Table 14 provides the results of the SRTT analyses of SIPI item responses with MBTI composite types, preferences, and standardly investigated type combinations. On only 4 of the 45 items males and females were found to share at least one association of MBTI composite type or preference, and of these shared associations, only 2 were reported at the same level of significance.

In addition, an inspection of Table 15 reveals that the correlations of SIPI items with MBTI preferences differed between males and females. It may be concluded that males and females responded differently in the pattern or extent of relationship of SIPI item responses with MBTI composite types and preferences.

Incidental Findings

Item 6 (an item measuring positive fantasy) on the SIPI was incorrectly keyed in the scoring instructions. Therefore, it was not found to be associated with positive fantasy when Pearson correlations were computed to check that each of the 15 items representing the 3 SIPI styles were actually associated with that style. The correlation of item 6 with positive fantasy was small and negative (-0.2781 for males and -0.1904 for females); therefore, it was assumed that the error caused by this item did not

influence seriously the results of the analyses which involved the SIPI mean scores. Had the item been keyed correctly in the scoring, it may have raised to a minimal degree the mean score for positive fantasy.

There was a low positive correlation of 0.3588 (p = .001) between negative fantasy and control of fantasy. This association was unexpected because it was not noted in the description of the SIPI standardization sample (Huba et al., 1982). The correlation represented in the MBTI Manual (Myers, 1962-1975) between the SN and JP scales of the MBTI, was found to be .42 for this study.

By an inspection of the SIPI item response selections, one interesting finding could be observed. The subjects who represented the composite types ENFP and ISTJ tended to report more extreme scores (very true or very untrue) than did other types. Subjects of the type ESFJ tended to report more moderate scores (moderately true, neutral, moderately untrue) than did other types. It appeared, therefore, that response set may have influenced the way persons of differing personality type answered the questions on the SIPI. No analyses were conducted to test whether this observation was statistically significant.

CHAPTER FIVE
DISCUSSION AND IMPLICATIONS

> The world we perceive is a dream we learn to have from a script we have not written. It is neither our capricious construction nor a gift we inherit without work. (Tomkins, 1962-1963, p. 13)

Summary

This study investigated whether college students of differing Jungian personality types responded in significantly differing ways to a questionnaire about their fantasy lives.

The subjects in the sample were 695 college freshmen and sophomores, 305 males and 390 females, with an age range of 17 to 26. There were 576 volunteers from a large community college and 119 volunteers from a large university in Gainesville, Florida.

The subjects responded to two questionnaires--the Myers-Briggs Type Indicator (MBTI), which measures Jungian personality types, and the Short Imaginal Processes Inventory (SIPI), which measures styles of daydreaming. All participants in the study received score profiles for each inventory and personal feedback from the investigator about the meaning of their scores.

The theories of personality type and fantasy elaborated by Carl Jung and the theories of daydreaming and fantasy described by Jerome Singer and Eric Klinger formed the theoretical bases for the study.

A comparison of the MBTI type characteristics of the research sample with two other available MBTI samples confirmed that subjects in this study were representative of MBTI type distributions for college students. Mean scores for positive and negative fantasy in this sample were higher than for the SIPI standardization sample, while mean scores for distractibility in this sample were roughly comparable to the standardization sample.

The data were examined in two main ways. First, the three SIPI styles were investigated for relationship to personality type. Second, the 45 single SIPI items were investigated for relationship to personality type.

The main research question--whether fantasy activity was related to personality type--was clarified by the following outcomes of the investigation:

1) Significant differences were found, using the analysis of variance statistic, for the 16 MBTI composite types on the SIPI styles of positive fantasy and distractibility. No significant differences were found for MBTI types on the style of negative fantasy.

2) Significant positive relationships, using t-test and chi square comparisons, were found between MBTI preferences--extraversion-introversion (EI), sensing-intuition (SN), thinking-feeling (TF), judgment-perception (JP)--and SIPI styles. Extraversion, intuition, and perception were associated with positive fantasy. Introversion, feeling, and perception were associated with distractibility. No significant relationships were found between MBTI preferences and negative fantasy.

3) There were low but significant positive (Pearson) correlations of MBTI preferences with SIPI styles. The direction of the associations was consistent with the other findings in the study: Extraversion, intuition, and perception were correlated with positive fantasy. Introversion, feeling, and perception were correlated with distractibility.

4) Many significant positive associations of responses to the 45 SIPI items with MBTI composite types and preferences were found in the results of testing with chi square comparisons. Endorsement or nonendorsement of an item differed for each item as to whether or not it was associated with MBTI composite types or preferences. On only 11 of the 45 items were there no associations found between item responses and MBTI scores.

5) There were low but significant positive (Pearson) correlations of MBTI preferences with SIPI item responses. The direction of the associations was consistent with the other findings in the study: Preferences for introversion, intuition, feeling, and perception were correlated positively with 26 of the 45 items.

6) Males and females differed in the pattern or extent of relationship found in all results for the data analyses which were conducted in this study. They differed on a) MBTI composite type rankings by SIPI mean scores, b) MBTI preferences associated with SIPI styles, c) correlations of MBTI preferences with SIPI styles, d) each of the 45 SIPI items in regard to which of the MBTI types or preferences were associated with the response to an item, and e) correlations of SIPI items with MBTI preference scores.

Discussion of Results

Positive Fantasy

Previously reviewed research (Pope & Singer, 1978; Singer, 1966) indicated that intuitive types often tended to score highly on various quantitative measures of fantasy, daydreaming, and related activities. This study also showed that MBTI intuitive types reported more positive fantasy

than sensing types. However, it seems important to distinguish between quantity and quality of fantasy. That is, it would be incorrect to assume that a subject reporting a low or average score on positive fantasy does not have a vivid fantasy life; such a score means only that the subject's positive fantasies are at a low or average level in comparison to other test subjects. Some persons may have a great many vivid, unpleasant, or fleeting fantasies and few pleasant ones. In other words, the positive fantasy score on the SIPI is not a general measure of the extent of a person's fantasy life. In some instances, previous research perhaps has not been careful to distinguish positive fantasy from fantasy in general.

In this study intuition was related to positive fantasy for both sexes. This result supported the theory that intuitive types tend to perceive more possibilities in a situation than sensing types (Myers, 1962-1975). If a daydream contains depressing events, the intuitive types may be able, on the one hand, to amplify those images with additional, depressing images. On the other hand, they may be more likely than sensing types to think of positive solutions or changes in the images.

On all six of the SIPI items concerned with acceptance of daydreaming and positive reactions to daydreams, the sensing types (or type groups which included sensing) showed a significantly negative attitude (for either males,

females, or both) toward daydreaming. The intuitive types showed a significantly positive attitude on these same items. This finding does not necessarily indicate that sensing types had impoverished fantasy lives; it means only that their fantasies tended to be experienced as less pleasant or less constructive than those experienced by the intuitive types. It could mean, also, that the sensing types saw fewer possibilities to change unpleasant daydreams or to make fantasies relevant to everyday life.

Negative Fantasy

It is striking that no significant relationships were found for MBTI composite types or preferences with the style of negative fantasy in this study. Also, fewer associations were found for MBTI composite types and preferences with the 15 items for negative fantasy than were found for the 15 items for each of the other two SIPI styles.

One explanation for these results may be that persons with a great deal of negative fantasy may not wish to report experiencing that type of mentation. A further explanation is that the subjects may have preferred not to attend to the awareness of unpleasant daydreams. Otherwise, they probably would have denied experiencing that sort of fantasy activity, and the results would then have been recorded as significant outcomes.

There were a few exceptions in the study which may illustrate this point. The ENFP males reported significantly more than other types that they do not get angry in daydreams, and the ESTJ males reported significantly more than other types that they do not feel guilty to escape punishment. Both of these items were measuring negative fantasy. It could be speculated that these responses by the two respective types indicated the presence of anxiety defense mechanisms.

Another explanation may be that the questions for negative fantasy may have appeared so socially undesirable that many subjects preferred to report a neutral response. For example, it is probably easier to report that the answer to a problem comes in a daydream (positive fantasy) or to confirm that one's thoughts drift from a tedious job (distractibility) than it is to admit to imagining lying to a friend (negative fantasy).

A final possible explanation for the results pertaining to negative fantasy has to do with the variable of hemisphericity--the extent to which a person relies upon cognitive processes associated with the left or right half of the brain--discussed in the literature review. Hemisphericity is associated with positive and negative emotion (Bakan & Glackman, 1981; Stevens, 1983). This variable--which was not controlled in the study--may have

produced enough interference to invalidate the results of investigating MBTI types for reports of negative fantasy.

In summary, it is interesting that the SIPI style scores for guilty-dysphoric daydreaming, as well as many of the items measuring this style, were not found related to MBTI composite types and preferences. Hypotheses about why these results occurred could be investigated in future research.

Distractibility

The range of responses for distractibility among the subjects in this study was larger than the range for positive and negative styles of fantasy. Apparently subjects felt free to respond with great variation to items concerned with their minds' wandering. Perhaps these items did not appear as socially undesirable as those for negative fantasy.

Questions about distractibility had a close correspondence to the definition of the MBTI judgment-perception dimension. Questions about positive or negative fantasy did not correspond closely to the definitions of other MBTI preference dimensions. For example, according to type theory (Myers, 1962-1975), judging types tend to pursue a current task until closure or completion is achieved, whereas perceptive types tend to look for new and changing aspects of a task. The implication is that perceptive types

may feel less comfortable than judging types in trying to remain focused upon a job for a long period of time.

On items measuring distractibility, subjects with the judgment preference (especially those with sensing and thinking) had an advantage over perceptive types (especially those with introversion and feeling) in reported ability to concentrate on what they were doing. On 12 of the 15 items for distractibility, the judging types (either males, females, or both) were less distractible than the perceptive types. According to MBTI type theory (Myers, 1962-1975), the combination of sensing with judging (SJ) disposes the individual to a practical, detailed, and thorough approach to work. The combination of thinking with judging (TJ) disposes the individual to an objective and decisive approach to situations. Persons with the combinations of preferences SJ, TJ, or STJ often exhibit a practical, tough-minded attitude. The combination of feeling with perception (FP) disposes the individual to a flexible approach to situations, especially when personal values are at stake. The combination of intuition with perception (NP) disposes the individual to openness about absorbing information for decisions. Persons with the combinations of preferences NF, NP, or NFP often exhibit a tolerant, tender-minded attitude.

In this study the practical, tough-minded types reported less than the tolerant, tender-minded types that their minds wandered from what they were doing. (James [1963] coined

the terms tough- and tender-minded). The decisive factor was the preference for judgment or perception, but the other two preference dimensions SN and TF also were very important for the item responses on the style of distractibility.

Introverts with perception (IP types) reported greater susceptibility to boredom than other types. This result also may be interpreted in accordance with type theory (Myers, 1962-1975). Faced with a relatively unchanging job, the introvert with perception may feel blocked from sources of internal stimulation. It could be argued that the extravert with perception would have a similar problem. However, extraverts invest energy in the outside world of events, whereas introverts feel drained by routine tasks in which they have invested little energy. Introverts may wish to leave an uninteresting task in order to withdraw to the more comfortable, inner world of reflection. Extraverts who wish to abandon an uninteresting task may still seek some attractive aspect of the task on which they can keep working.

A Comment on Introversion

Because the definition of introversion includes the notion of an internal focus of attention, it has been hypothesized in previous studies (Singer, 1966) that introverts are more likely than extraverts to have a vivid fantasy life. The results of this study showed that introversion was not significantly related to either positive or

negative fantasy. On the contrary, the extraverted females scored significantly higher than the introverted males or females on positive fantasy. Perhaps the extraverted females were more inclined than others to report positive fantasies because of social desirability. Or perhaps the introverts experienced more fantasy in general, but of a negative, unpleasant variety.

Caution is necessary in interpreting the results of other studies which investigate how either introversion or extraversion alone is related to fantasy because other variables must be taken into consideration. For example, in this study the combination of introversion with feeling and perception--not introversion alone--was found to constitute a personality type more vulnerable than other types to the occurrence of fleeting, poorly controlled imagery.

Feedback Sessions

In the subjective experience of the researcher, there appeared to be large differences in the way groups of students tested with the MBTI and the SIPI responded to feedback about their scores. For groups which included many extraverts with intuition and perception, the feedback sessions usually were lively. For groups which included many introverts with sensing and judging, very few questions or comments were addressed to the researcher. However, at the end of these sessions, after the group had dispersed, the

introverts often approached the researcher with questions. The thinking-feeling dimension, in the opinion of the researcher, did not seem to make a difference in students' curiosity about fantasy or in their willingness to participate in the discussion.

The questions asked most frequently in the majority of feedback sessions dealt with misunderstanding or lack of information about private mentation. It was apparent that those students who had read about dreams and fantasies in popularly marketed psychology literature were confused by an array of contradictory theories and opinions. For the students who participated with questions, or the relating of experiences in the feedback sessions, it was obvious that many of them associated the domain of daydreaming with so-called extrasensory perception and other extraordinary or unusual personal experiences. In nearly every feedback session, regardless of group composition, someone asked about the "deja-vu" effect or about the implications of bizarre fantasies for a person's mental health. Apparently the widespread cultural bias connecting fantasy with superstition and pathology (discussed in the literature review) was still an influence upon the subjects in this study. The lack of understanding or insight about dream-like cognition (nondirected thinking) may have had an effect on the way subjects responded to the SIPI.

Limitations of the Study

It was not possible to select subjects in a random fashion because of the difficulty of obtaining an adequate number of subjects for each MBTI type category. However, there was an advantage in obtaining both university and community college students for subjects because the results of the study may be generalized to a broad population of college students.

Data obtained from self-report inventories such as the MBTI and the SIPI must be interpreted as an indication of what people are willing to say about themselves rather than what is necessarily true. The questions on the MBTI have a close link to everyday life because it is possible to check whether people actually behave according to the preferences they select on the MBTI. But fantasy activity, as measured on the SIPI, usually is not open to outer inspection. This fact is a limitation of this study only insofar as certain SIPI test subjects may be so unaware of their inner life that it is difficult for them to say whether a certain fantasy content does or does not occur. In contrast, people seem to be generally more aware of their own Jungian attitudes and functions than of their fantasy life because the consequences of these preferences are more visible than is the influence of fantasy activity.

Scores on the daydreaming styles may be influenced somewhat by temporary moods or by stress. A person

suffering from loss of sleep or someone forced to do disagreeable work, for example, may be more likely to endorse an item measuring poor attentional control than a person in a happier frame of mind.

A special difficulty with the SIPI is that many of the items are negatively worded in order to avoid a positive response set. The result is that subjects are often confused by double negatives when thinking about how to answer an item. For persons of various ethnic backgrounds, for whom English is a second language, the negatively worded items may lead to the marking of choices other than those truly intended.

Because there is less research with the Short IPI than with the longer form of the IPI, it is uncertain to what extent the results of this study may be generalized to populations other than college students similar to those in this sample. For persons of other ages and educational status, caution is necessary in interpreting the results of this study. The finding that for the present sample the mean scores for positive and negative fantasy were higher than those for the standardization sample also limits confidence about generalizing the results of the study. Other SIPI comparison samples would be necessary to confirm which mean scores for the daydreaming styles were truly typical for college students.

It is possible that the three cognitive style dimensions discussed in the review of literature--verbalizer-visualizer types, right-left brained types, and field dependent-independent types--may have influenced or interfered with the results of the present study. For example, the three items included under positive fantasy for problem-solving may have been associated with right or left brained types; the three items included under negative fantasy for achievement orientation may have been associated with field independent types; and the five items included under distractibility for mind-wandering may have been associated with verbalizer or visualizer types. The important point is that the cognitive style variables on the MBTI provide only some of the factors which explain the variation in the fantasy lives of college students.

Implications of the Study

> For the purpose of research is not to imagine that one possesses the theory which alone is right, but, doubting all theories, to approach gradually nearer the truth. (Jung, 1974, p. 83)

The present research was carried out with the goal of clarifying a part of the stream of consciousness assumed to be influenced by the cognitive style variables of Jungian personality types and styles of daydreaming. The results of this study provide information for all counselors who are

concerned with imagery or imaginal methods in some aspect of the therapeutic process.

The individuation process follows a unique path for every person who seeks therapeutic help. The effectiveness of therapists' work depends partially on their sensitivity to the individual differences of their clients and their ability to adjust therapeutic interventions accordingly. Important for counselors are at least three implications which emerge from the results of this investigation.

First, the study showed that persons who preferred intuition as their favorite perceptive process (especially those with feeling and perception) were more likely than persons who preferred sensing to enjoy daydreams and to view them as helpful in their lives. Probably these intuitive types would be more likely than sensing types to react with trust and enthusiasm to a therapeutic approach such as guided imagery.

The sensing types in this study (especially those with thinking and judging) exhibited more negative reactions than intuitive types to daydreaming. This finding does not imply that sensing types would not benefit from the use of imaginal methods in therapy. However, the sensing types might find such methods more attractive if they were persuaded to see the practical relevance and usefulness of, for example, tackling a personal problem with dream analysis or psychodrama. A therapeutic approach which begins by making

demands upon the imaginative resources of extreme sensing types may be, at best, an ineffective path to healing their problems. The main point is that the results of this study imply that the practical, tough-minded (STJ) types may be less attracted initially to a counseling approach which uses imaginal methods than the less practical, tender-minded (NFP) types.

Second, the study revealed that the Jungian type classification was not related to reports of negative fantasy. This finding implies at least two possibilities. One consideration is that people may be unaware of or resistant to focusing upon unpleasant fantasy. They may think it is socially undesirable to report such negative mentation. Another consideration is that other personality variables which play a role in negative emotions may cancel the results of investigating negative fantasy for associations with MBTI types.

Third, this study produced evidence that perceptive types (especially those with introversion and feeling) report more difficulties than judging types in their ability to concentrate on what they are doing. This finding implies that counselors working with clients who are introverted feeling types (IFP) should be aware that these clients may tend to drift more easily than other types of clients into fleeting, poorly controlled imagery, or that they may tend easily to become bored for reasons hard for others to

understand. The counselor may need to exercise particular care to keep in contact with the private mentation of these persons. When imaginal methods are used in counseling, the perceptive types may need encouragement to keep the images in clear focus, whereas the judging types may need encouragement to allow the images to unfold spontaneously.

Recommendations for Further Research

This study provided a general level of information about the relationship of personality to fantasy life for college students. The research hypotheses were formulated as null hypotheses because of the lack of previous empirical research in the domains of interest. On the basis of the outcomes of this investigation, it would be possible to formulate directional hypotheses. For instance, predictions of attitudes about fantasy could be made for sensing and intuitive types.

The items on the SIPI for positive and negative fantasy were taken from five different scales on the long form of the IPI, and the items for distractibility were taken from three different scales on the long IPI. It would be interesting to investigate whether SIPI items from a particular scale are related to MBTI type more than items from the other original scales. For example, in this study those items for fear of failure included under negative fantasy

were not productive of as many associations with MBTI types as the other items for negative fantasy.

During the feedback sessions many students complained that the questions on the SIPI failed to represent adequately the realm of their inner experiences with dream-like thought. Those subjects who felt restricted by the SIPI in what they could express about their fantasy lives would profit from a research approach that included depth interviews. A study could be designed using both MBTI and SIPI, plus interviews, which could provide estimates of MBTI type development and the specific content of fantasies.

The main research questions in this study focused upon personality types and fantasy styles. The issue of differences by personality type for males and females was secondary. Future studies could be designed to test for differences in the fantasy lives of males and females of the same personality types.

Another recommendation for future research would be to investigate the influences on fantasy life of variables in addition to Jungian personality types. The three dimensions discussed in the literature review--verbalizer-visualizer types, right-left brained types, and field dependent-independent types--could be included in a future study of personality and fantasy.

APPENDIX A
STANDARDIZED INSTRUCTIONS

After the two inventories had been distributed, students who participated in the study were read the following instructions:

1. Please fill in your name and age on the MBTI answer sheet in the spaces provided. Place your name and age on the upper right corner of the SIPI test booklet. Use number 2 pencils for both questionnaires.
2. Instructions for the MBTI are on the front of the booklet, and those for the SIPI are at the top of the first page.
3. Now please listen carefully for a moment. On the daydream questionnaire some of the items are worded negatively. Remember that an answer of "5" means "like me" and an answer of "1" means "not like me." Check to be sure you are marking the responses the way you really intend to answer the questions. It is very easy to get mixed up on the negatively worded items, and then your scores will show the wrong results. So don't let that happen to you!

4. Be sure to sign your name right now on the informed consent form and hand it back to me at the end of the session.
5. Now you may begin. There is no time limit on these questionnaires.

APPENDIX B
INFORMED CONSENT FORM

It has been found that fantasies and daydreams may be very important to the personality development of an individual. The purpose of this research is to find out if there are differences in the fantasy lives of college students depending on their personality types. The scores on two test inventories will be compared for all the students who volunteer to fill out the self-report items involved. Over 500 students, males and females, will be participating in the study. The Myers-Briggs Type Indicator provides information about natural preferences and choices in everyday life. It takes about 45 minutes to complete. The Short Imaginal Processes Inventory provides information about characteristic styles of daydreaming. It takes about 10 minutes to complete. Both tests measure normal processes of normal people and do not provide information about unhealthy or pathological personality characteristics. Both tests provide information that can help a person to greater self-understanding and awareness. After completion of the two inventories, feedback sessions will be scheduled for small groups of students who wish feedback on their scores.

Results of the research will be used to help counselors to recognize and optimally consider the individual personality differences in their clients' fantasy lives.

Any inquiries about the research procedures may be posed freely to the investigator at any time, and there will be an attempt to answer all questions. Any volunteer subject for this research is free to withdraw his or her consent and to discontinue participation in the project at any time without prejudice. There will be no monetary reward for participation.

The information obtained will be kept confidential to the extent provided by law. If you have any questions, you can reach me at home at 495-2912.

I have read and I understand the procedure described above. I agree to participate in the procedure, and I have received a copy of this description.

_____
(signature of student)

Additional Information:

Principal Investigator: Jeanne Kienzle
Box 657
Archer, FL 32618
phone: (904) 495-2912

Supervisor: Dr. Mary McCaulley
Center for Applications of
Psychological Type
2720 N.W. 6th Street, Suite A
Gainesville, FL 32601
phone: (904) 375-0160

APPENDIX C
DOMINANT FUNCTIONS OF SUBJECTS IN THE RESEARCH SAMPLE

Function	Males		Females		Total	
	N	%	N	%	N	%
Sensing	85	27.9	107	27.4	192	27.6
Intuition	76	24.9	84	21.5	160	23.0
Thinking	92	30.2	64	16.4	156	22.4
Feeling	52	17.0	135	34.6	187	26.9
Total	305		390		695	

APPENDIX D
FREQUENCIES OF ORIGINAL JUNGIAN TYPES
FOR SUBJECTS IN THE RESEARCH SAMPLE

Types	Males		Females		Total	
	N	%	N	%	N	%
ET (ESTJ, ENTJ)	50	16.4	35	9.0	85	12.2
IT (ISTP, INTP)	42	13.8	29	7.4	71	10.2
EF (ESFJ, ENFJ)	20	6.6	80	20.5	100	14.4
IF (ISFP, INFP)	32	10.5	55	14.1	87	12.5
ES (ESTP, ESFP)	42	13.8	47	12.1	89	12.8
IS (ISFJ, ISTJ)	43	14.1	60	15.4	103	14.8
EN (ENFP, ENTP)	54	17.7	71	18.2	125	18.0
IN (INTJ, INFJ)	22	7.2	13	3.3	35	5.0
Total	305		390		695	

APPENDIX E
PERCENT OF MBTI PREFERENCES OF RESEARCH SAMPLE
COMPARED TO TWO OTHER MBTI SAMPLES

Preference	Percent of Research Sample	Percent of 1972 U.F. Freshmen	Percent of 1983 Aggregate U.S. Freshmen
	N = 695	N = 3,209	N = 5,844
E	57.4	53.7	57.6
I	42.6	46.3	42.4
S	58.6	45.4	64.4
N	41.4	54.6	35.6
T	45.9	37.7	40.0
F	54.1	62.3	60.0
J	46.5	48.5	56.3
P	53.5	51.6	43.7

APPENDIX F
SRTT (CHI SQUARE) RATIOS FOR MBTI TYPES REPORTING SIGNIFICANT ASSOCIATIONS WITH SIPI ITEMS

Item	M			F		
1.	S	lo	1.17	ENFP	lo	.42*
		hi	.88		hi	1.37*
Acceptance	N	lo	.79	S	lo	1.18*
of		hi	1.14		hi	.88*
Daydreams	SJ	lo	1.38*	N	lo	.71*
		hi	.74*		hi	1.19*
				SF	lo	1.26*
					hi	.83*
				NF	lo	.66*
					hi	1.22*
				NP	lo	.59*
					hi	1.26*
				FJ	lo	1.26
					hi	.83
				EN	lo	.63*
					hi	1.24*
*2.	S	lo	1.17	IJ	lo	1.45*
		hi	.89		hi	.73*
(Visual)	N	lo	.79			
Imagery		hi	1.13			
	NJ	lo	.46			
		hi	1.33			
3.	TP	lo	1.23	---		
		hi	.62*			
Problem Solving						
4.	J	lo	.75	---		
		hi	1.15			
Future	P	lo	1.20			
Orientation		hi	.88			
	EJ	lo	.54*			
		hi	1.26*			
	SJ	lo	.67			
		hi	1.19			

Item	M			F		
5. Positive Reactions	ISTJ	lo	1.42	ISFJ	lo	1.39
		hi	.31		hi	.52
	E	lo	.88	S	lo	1.12
		hi	1.20		hi	.85
	I	lo	1.14	N	lo	.81
		hi	.76		hi	1.23
	IJ	lo	1.23	SF	lo	1.16
		hi	.61		hi	.80
				NF	lo	.77
					hi	1.29
6. (Auditory) Imagery	---			ISFJ	lo	.63
					hi	1.42
*7. Acceptance of Daydreams	---			S	lo	1.17*
					hi	.88*
				N	lo	.74*
					hi	1.18*
				EP	lo	.76
					hi	1.17
				NP	lo	.67*
					hi	1.23*
				EN	lo	.67
					hi	1.23
				IS	lo	1.32
					hi	.78
8. Positive Reactions	ESFP	lo	2.03	S	lo	1.18
		hi	.50		hi	.92
				N	lo	.72
					hi	1.12
				J	lo	1.23
					hi	.90
				P	lo	.79
					hi	1.09
				EP	lo	.59*
					hi	1.18*
				SJ	lo	1.31
					hi	.87
				NP	lo	.65
					hi	1.15
				IS	lo	1.41
					hi	.82
*9. Future Orientation	---			---		

Item		M			F		
10. Problem Solving	EN	lo hi	.76 1.32		---		
11. (Visual) Imagery	---				---		
12. Positive Reactions	NF	lo hi	.49 1.24		S N EP IS 	lo hi lo hi lo hi lo hi	1.07 .84 .89 1.26 .87 1.32 1.18* .56*
*13. Problem Solving	INFP S N NF SJ NP	lo hi lo hi lo hi lo hi lo hi	.11 1.83 1.16 .85 .80 1.18 .50* 1.46* 1.28 .74 .75 1.23		S N EP SF NP NP 	lo hi lo hi lo hi lo hi lo hi lo hi	1.14 .92 .77 1.13 .73 1.16 1.22 .87 .73 1.16 .73 1.16
14. Future Orientation	---				---		
15. Accep-tance of Daydreams	ENFP NF	lo hi lo hi	.33 1.36 .50 1.27		IS	lo hi	1.18 .62
16. Guilt	---				---		
17. Achievement	---				---		

Item	M			F		
18. Failure	---			---		
19. Frightened Reactions	---			---		
20. Hostility	---			---		
21. Failure	---			TJ	lo	1.24
					hi	.61
22. Hostility	ENFP	lo	1.74*	---		
		hi	.23*			
23. Guilt	---			---		
24. Achievement	---			ISTJ	lo	.54
					hi	1.74
*25. Frightened Reactions	---			EP	lo	.83
					hi	1.23
26. Failure	---			NT	lo	1.30
					hi	.46
27. Hostility	---			ISTP	lo	.36
					hi	1.69
				IP	lo	.71
					hi	1.32
28. Achievement	---			ISTJ	lo	.46
					hi	1.88
				T	lo	.78*
					hi	1.36*
				F	lo	1.10*
					hi	.84*
				ST	lo	.80
					hi	1.33
				SF	lo	1.15
					hi	.76
				TJ	lo	.66
					hi	1.56

Item	M			F		
29. Guilt	ESTJ	lo	1.57	---		
		hi	.67			
30. Frightened Reactions	---			ESFJ	lo	.76
					hi	1.42
31. Boredom	ISTP	lo	.71	INTJ	lo	3.76
		hi	1.91		hi	.25
	IP	lo	.85			
		hi	1.47			
32. Mind-wandering	ESTP	lo	1.77	J	lo	1.13*
		hi	.61		hi	.76*
	S	lo	1.19	P	lo	.88*
		hi	.90		hi	1.22*
	N	lo	.76	IP	lo	.74*
		hi	1.12		hi	1.47*
	ST	lo	1.32	NF	lo	.82
		hi	.84		hi	1.32
	NP	lo	.62	SJ	lo	1.14
		hi	1.19		hi	.75
	FP	lo	.61	NP	lo	.83
		hi	1.19		hi	1.30
				FP	lo	.85
					hi	1.27
*33. Mind-wandering	INTP	lo	.22*	ENFP	lo	.56
		hi	1.83*		hi	1.38
	S	lo	1.99*	ISTJ	lo	1.64
		hi	.80*		hi	.44
	N	lo	.77*	S	lo	1.20*
		hi	1.25*		hi	.83*
	ST	lo	1.22	N	lo	.68*
		hi	.77		hi	1.27*
	NT	lo	.69*	J	lo	1.21*
		hi	1.33*		hi	.81*
	SJ	lo	1.24	P	lo	.80*
		hi	.74*		hi	1.17*
	NP	lo	.79*	IP	lo	.69
		hi	1.31*		hi	1.27
	IN	lo	.69	ST	lo	1.31
		hi	1.33		hi	.73
	ES	lo	1.30*	NF	lo	.64*
		hi	.68*		hi	1.31*
				SJ	lo	1.29*
					hi	.75*

Item	M			F		
33. (Cont'd.)				NP	lo	.60*
					hi	1.35*
				TJ	lo	1.41
					hi	.64
				FP	lo	.78
					hi	1.19
				IN	lo	.56
					hi	1.38
				EN	lo	.76
					hi	1.21
				ES	lo	1.24
					hi	.80
34. Boredom	E	lo	1.18	J	lo	1.22*
		hi	.90		hi	.84*
	I	lo	.78	P	lo	.80*
		hi	1.12		hi	1.15*
	IP	lo	.58			
		hi	1.34			
*35. Distracti-bility	ESTJ	lo	1.41	ENFP	lo	.61
		hi	.52		hi	1.30
	S	lo	1.16*	J	lo	1.20*
		hi	.81*		hi	.85*
	N	lo	1.16*	P	lo	.81*
		hi	1.23*		hi	1.14*
	T	lo	1.10	IP	lo	.58*
		hi	.88		hi	1.31*
	F	lo	.81	EJ	lo	1.26
		hi	1.22		hi	.81
	ST	lo	1.21	NF	lo	.69
		hi	.75		hi	1.23
	NF	lo	.61*	SJ	lo	1.21
		hi	1.45*		hi	.85
	SJ	lo	1.27*	NP	lo	.69*
		hi	.68*		hi	1.23*
	FP	lo	.74	TJ	lo	1.49*
		hi	1.30		hi	.63*
				FP	lo	.76
					hi	1.18
				ES	lo	1.32*
					hi	.76*
36. Distracti-bility	NF	lo	.64	---		
		hi	1.31			

Item	M			F		
37. Mind-wandering	---			---		
38. Boredom	ESTJ	lo	1.42	FP	lo	.82
		hi	.43		hi	1.23
	J	lo	1.16			
		hi	.79			
	P	lo	.88			
		hi	1.17			
	EJ	lo	1.24			
		hi	.68			
	FP	lo	.76			
		hi	1.33			
39. Distracti-bility	---			J	lo	1.24*
					hi	.84*
				P	lo	.78*
					hi	1.15*
				IJ	lo	1.38
					hi	.74
				NP	lo	.72
					hi	1.19
				NJ	lo	1.64*
					hi	.56*
				FP	lo	.71*
					hi	1.20*
				FJ	lo	1.29*
					hi	.80*
40. Boredom	J	lo	1.13	E	hi	.86
		hi	.77		lo	NS
	P	lo	.90	I	hi	1.21
		hi	1.19		lo	---
	IP	lo	.78	J	lo	1.25*
		hi	1.40		hi	.64*
				P	lo	.77*
					hi	1.33*
				IP	lo	.60
					hi	1.63*
				SJ	lo	1.26
					hi	.60*
				SP	hi	1.38*
					lo	---
				FP	lo	.73
					hi	1.33*

Item		M			F		
40. Cont'd.					FJ	lo	1.27
						hi	.60*
					ES	hi	.72
						lo	---
					ESFJ	lo	1.40
						hi	.55
					ESFP	hi	1.76
						lo	---
					INFP	hi	1.60
						lo	---
41. Distracti-bility	SF	lo	.61		S	lo	.88
		hi	1.33			hi	1.10
	EN	lo	1.28		N	lo	1.19
		hi	.76			hi	.84
					SF	lo	.81
						hi	1.16
					SJ	lo	.81
						hi	1.16
					NP	lo	1.24
						hi	.80
					FJ	lo	.77
						hi	1.20
					IN	lo	1.36
						hi	.69
*42. Boredom	---				J	lo	1.13
						hi	.80
					IP	lo	.77
						hi	1.34
					EJ	lo	1.20
						hi	.70
					FJ	lo	1.18
						hi	.73
43. Distracti-bility	---				---		
*44. Mind-wandering	IP	lo	.74		J	lo	1.21*
		hi	1.26			hi	.85*
					P	lo	.80*
						hi	1.14*
					EJ	lo	1.28
						hi	.80
					SJ	lo	1.20
						hi	.86

Item		M			F		
45.	IP	lo	.75		ISTP	lo	.24_
		hi	1.29			hi	1.84_
					J	lo	1.16
						hi	.82
					P	lo	.85
						hi	1.17
					IP	lo	.59*
						hi	1.46*
					FP	lo	.82
						hi	1.20

Note. All items $p = .01$ except * $p = .001$. Underscore indicates that Fisher exact probability test was computed. Items starred are negatively worded.

Item			Total	
1.	Acceptance of Daydreams	ENFP	lo	.56*
			hi	1.29*
		ESFJ	lo	1.37
			hi	.75
		S	lo	1.18*
			hi	.88*
		J	lo	1.17*
			hi	.89*
		EP	lo	.77
			hi	1.15
		SF	lo	1.21
			hi	.86
		NF	lo	.70*
			hi	1.20*
		SJ	lo	1.25*
			hi	.83*
		NP	lo	.68*
			hi	1.21*
		FP	lo	.76*
			hi	1.16*
		FJ	lo	1.27
			hi	.82
*2.	(Visual) Imagery	SJ	lo	1.18
			hi	.89
3.	Problem Solving	---		
4.	Future Orientation	J	lo	.84
			hi	1.08
		EJ	lo	.76
			hi	1.12
5.	Positive Reactions	ISFJ	lo	1.32
			hi	.55
		E	lo	.92
			hi	1.11
		I	lo	1.10
			hi	.85
		IJ	lo	1.22*
			hi	.70*
		NF	lo	.81
			hi	1.26
6.	(Auditory) Imagery	---		

Item			Total	
*7.	Problem Solving	ENFP	lo	.65
			hi	1.28
		S	lo	1.10
			hi	.92
		N	lo	.86
			hi	1.11
		EP	lo	.82
			hi	1.14
		NF	lo	.77
			hi	1.18
		NP	lo	.80
			hi	1.16
		IS	lo	1.21
			hi	.83
8.	Positive Reactions	ENFP	lo	.60
			hi	1.18
		S	lo	1.15
			hi	.93
		N	lo	.79
			hi	1.10
		EN	lo	.69
			hi	1.14
		IS	lo	1.27
			hi	.88
9.	Future Orientation	---		
10.	Problem Solving	S	lo	1.08
			hi	.90
		N	lo	.89
			hi	1.14
		EN	lo	.80*
			hi	1.26*
11.	Visual Imagery	---		
12.	Positive Reactions	ISFJ	lo	1.36
			hi	.58
		S	lo	1.08
			hi	.91
		N	lo	.89
			hi	1.13
		T	lo	.88
			hi	1.13
		F	lo	1.10
			hi	.89

Item		Total	
12. (Cont'd)	SF	lo	1.25*
		hi	.71*
	FJ	lo	1.19
		hi	.78
*13. Problem Solving	ISFP	lo	1.49
		hi	.65
	ENFP	lo	.66
		hi	1.25
	S	lo	1.14*
		hi	.90*
	N	lo	.80*
		hi	1.15*
	J	lo	1.14
		hi	.90
	P	lo	.88
		hi	1.09
	EP	lo	.79
		hi	1.15
	NF	lo	.66*
		hi	1.24*
	SJ	lo	1.21*
		hi	.85*
	NP	lo	.74*
		hi	1.19*
	TJ	lo	1.25
		hi	.82
	EN	lo	.76
		hi	1.17
	IS	lo	1.20
		hi	.86
14. Future Orientation	---		
15. Acceptance of Daydreams	ISFJ	lo	1.40
		hi	.54
	S	lo	1.11*
		hi	.88*
	N	lo	.85*
		hi	1.18*
	SF	lo	1.21*
		hi	.76*
	SJ	lo	1.15
		hi	.83
16. Guilt	---		

Item		Total	
17. Achievement	---		
18. Failure	---		
19. Frightened Reactions	---		
20. Hostility	---		
21. Failure	---		
22. Hostility	E	lo	1.09
		hi	.88
	I	lo	.88
		hi	1.17
	ES	lo	1.13
		hi	.82
23. Guilt	---		
24. Achievement	ESFP	lo	1.44
		hi	.49
	T	lo	.88
		hi	1.14
	F	lo	1.10
		hi	.88
	SF	lo	1.17
		hi	.80
	TJ	lo	.83
		hi	1.20
*25. Frightened Reactions	---		
26. Failure	---		
27. Hostility	ISFJ	lo	1.36
		hi	.61
	ISTP	lo	.62
		hi	1.41
	IP	lo	.75*
		hi	1.27*
28. Achievement	ISTJ	lo	.67
		hi	1.47
	T	lo	.85*
		hi	1.22*
	F	lo	1.13*
		hi	.81*

Item		Total	
28. (Cont'd)	ST	lo	.83*
		hi	1.25*
	TJ	lo	.79*
		hi	1.31*
	FP	lo	1.15
		hi	.78
29. Guilt	ESTJ	lo	1.43
		hi	.72
30. Frightened Reactions	---		
31. Boredom	INTJ	lo	1.68
		hi	.44
	ENFP	lo	.69
		hi	1.26
	ENTP	lo	1.47
		hi	.61
	ESFJ	lo	.68
		hi	1.27
	T	lo	1.29*
		hi	.76*
	F	lo	.75*
		hi	1.21*
	ST	lo	1.22*
		hi	.82*
	SF	lo	.68*
		hi	1.26*
	NT	lo	1.41*
		hi	.66*
	TJ	lo	1.34*
		hi	.72*
	TP	lo	1.24
		hi	.80
	FJ	lo	.72
		hi	1.17
32. Mindwandering	INFP	lo	.59
		hi	1.43
	ESFJ	lo	1.31
		hi	.68
	S	lo	1.11*
		hi	.88*
	N	lo	.84*
		hi	1.16*
	J	lo	1.16*
		hi	.84*
	P	lo	.86*
		hi	1.14*

Item		Total	
32. (Cont'd)	IP	hi	.70*
		lo	1.31*
	SF	lo	1.19*
		hi	.80*
	SJ	lo	1.21*
		hi	.79*
	NP	lo	.77*
		hi	1.24*
	FP	lo	.85
		hi	1.16
	FJ	lo	1.28*
		hi	.72*
	IN	lo	.75
		hi	1.26
	ES	lo	1.18
		hi	.82
*33. Mindwandering	INTP	lo	.33*
		hi	1.63*
	ENFP	lo	.67
		hi	1.31
	ESTJ	lo	1.37
		hi	.65
	S	lo	1.19*
		hi	.82*
	N	lo	.73*
		hi	1.26*
	J	lo	1.17*
		hi	.84*
	P	lo	.85*
		hi	1.14*
	IP	lo	.75*
		hi	1.23*
	EJ	lo	1.20
		hi	.81
	ST	lo	1.27*
		hi	.74*
	NF	lo	.72*
		hi	1.27*
	NT	lo	.74
		hi	1.24
	SJ	lo	1.26*
		hi	.75*
	NP	lo	.65*
		hi	1.33*
	TJ	lo	1.24*
		hi	.77*

Item		Total	
33. (Cont'd)	FP	lo	.82
		hi	1.17
	IN	lo	.64*
		hi	1.34*
	EN	lo	.79
		hi	1.20
	ES	lo	1.26*
		hi	.76*
34. Boredom	ISTP	lo	.38
		hi	1.40
	J	lo	1.20*
		hi	.87*
	P	lo	.82*
		hi	1.11*
	IP	lo	.66*
		hi	1.22*
	EJ	lo	1.27*
		hi	.83*
	SJ	lo	1.21
		hi	.86
	FJ	lo	1.23
		hi	.85
*35. Distractibility	ISTJ	lo	1.37
		hi	.66
	INFP	lo	.54
		hi	1.42
	ENFP	hi	.60*
		lo	1.36*
	ESTJ	lo	1.47*
		hi	.57*
	S	lo	1.13*
		hi	.88*
	N	lo	.82*
		hi	1.17*
	T	lo	1.18*
		hi	.83*
	F	lo	.84*
		hi	1.14*
	J	lo	1.16*
		hi	.86*
	P	lo	.86*
		hi	1.12*
	IP	lo	.73*
		hi	1.24*

Item		Total	
35. (Cont'd)	EJ	lo	1.19
		hi	.83
	ST	lo	1.27*
		hi	.76*
	NF	lo	.65*
		hi	1.32*
	SJ	lo	1.22*
		hi	.80*
	NP	lo	.74*
		hi	1.23*
	TJ	lo	1.33*
		hi	.70*
	FP	lo	.74*
		hi	1.24*
	ES	lo	1.25*
		hi	.78*
36. Distractibility	T	lo	1.13
		hi	.90
	F	lo	.89
		hi	1.09
37. Mindwandering	---		
38. Boredom	ESTJ	lo	1.35
		hi	.54
	J	lo	1.13*
		hi	.82*
	P	lo	.88*
		hi	1.15*
	IP	lo	.82
		hi	1.23
	EJ	lo	1.20*
		hi	.74*
	SJ	lo	1.13
		hi	.83
	FP	lo	.80*
		hi	1.27*
39. Distractibility	ENFP	lo	.54
		hi	1.30
	J	lo	1.17*
		hi	.89*
	P	lo	.86*
		hi	1.09*
	IP	lo	.75
		hi	1.16

Item		Total	
39. (Cont'd)	NP	lo	.78
		hi	1.11
	NJ	lo	1.37
		hi	.76
	FP	lo	.73*
		hi	1.18*
	FJ	lo	1.25
		hi	.84
40. Boredom	ENFP	lo	.56
		hi	1.61*
	ESFP	lo	---
		hi	1.62
	ESFJ	lo	---
		hi	.61
	E	lo	---
		hi	.87
	I	lo	---
		hi	1.18
	T	lo	1.11
		hi	---
	F	lo	.90
		hi	---
	J	lo	1.17*
		hi	.69*
	P	lo	.85*
		hi	1.26*
	IP	lo	.72*
		hi	1.52*
	EJ	lo	1.18
		hi	.63*
	SJ	lo	1.14
		hi	.68*
	SP	lo	---
		hi	1.26
	TJ	lo	1.24*
		hi	---
	FP	lo	.76*
		hi	1.30*
	FJ	lo	---
		hi	.62*
	IN	lo	---
		hi	1.29
	ES	lo	---
		hi	.77

Item		Total	
41. Distractibility	S	lo	.90
		hi	1.09
	N	lo	1.15
		hi	.88
	SF	lo	.77*
		hi	1.20*
	SJ	lo	.85
		hi	1.13
	NP	lo	1.18
		hi	.85
	FJ	lo	.75*
		hi	1.21*
42. Boredom	ESFJ	lo	1.35
		hi	.65
	ENFJ	lo	1.58
		hi	.40
	J	lo	1.16*
		hi	.84*
	P	lo	.86*
		hi	1.14*
	IP	lo	.76*
		hi	1.24*
	EJ	lo	1.23*
		hi	.76*
	SJ	lo	1.17*
		hi	.82*
	SP	lo	.82*
		hi	1.18*
	FP	lo	.85
		hi	1.15
	FJ	lo	1.31*
			.69*
43. Distractibility	---		
44. Mindwandering	J	lo	1.15*
		hi	.88*
	P	lo	.87*
		hi	1.11*
	IP	lo	.75
		hi	1.21
	SJ	lo	1.18
		hi	.85

Item		Total	
44. (Cont'd)	NP	lo	.79
		hi	1.17
	FP	lo	.81
		hi	1.15
45. Mindwandering	ESTP	lo	.57
		hi	1.49
	E	lo	1.08
		hi	.91
	I	lo	.89
		hi	1.12
	J	lo	1.14*
		hi	.84*
	P	lo	.88*
		hi	1.13*
	IP	lo	.67*
		hi	1.38*
	SJ	lo	1.13
		hi	.85
	SP	lo	.84
		hi	1.19
	TJ	lo	1.19
		hi	.78
	FP	lo	.84
		hi	1.19

Note. All items $p = .01$ except * $p = .001$. Underscore indicates that Fisher exact probability test was computed. Items starred are negatively worded.

APPENDIX G
EXTENSION OF TABLE 14 FOR TOTAL SAMPLE

Item	True (T) or Untrue (U)	Totals
1. Original idea can develop from a fantastic daydream.	T	ENFP*,NF*,NP*,FP*, EN*
	U	ESFJ,S*,J*,SF,SJ*, FJ,IS
*2. Do not really "see" objects in a day-dream.	T	SJ
	U	--
3. Answer to problem comes in daydream.	T	--
	U	--
4. Picture myself in future.	T	--
	U	J,EJ
5. Fantasies provide pleasant thoughts.	T	E,NF
	U	ISFJ,I,IJ*,IS
6. Sounds in daydreams are clear and distinct.	T	--
	U	--
*7. Daydreaming never solves problems.	T	S,IS
	U	ENFP,N,EP,NF,NP
8. Daydreams are stimulating and rewarding.	T	ENFP,N,EN
	U	S,IS
*9. Seldom think what I will do in future.	T	--
	U	--

Item	True (T) or Untrue (U)	Totals
10. Daydreams offer useful cues to tricky situations.	T U	N,EN S
11. Pictures in my mind are clear as photos.	T U	-- --
12. Daydreams often leave a warm, happy feeling.	T U	N,T ISFJ,S,F,SF*,FJ
*13. Daydreams have no practical significance.	T U	ISFP,S*,J,SJ*,TJ,IS ENFP,N,P,NF,NP,EN
14. Daydream what I'd like to see happen in future.	T U	-- --
15. Daydreams are worthwhile and interesting.	T U	N* ISFJ,S*,SF*,SJ
16. Have fantasy of being caught lying to friend.	T U	-- --
17. See self as expert.	T U	-- --
18. Imagine failing those I love.	T U	-- --
19. Dayreams contain depressing events.	T U	-- --
20. Show anger to enemies in fantasy.	T U	-- --
21. Imagine self not completing job.	T U	-- --

Item	True (T) or Untrue (U)	Totals
22. Get angry in daydreams.	T	I
	U	E,ES
23. Afraid of being caught doing wrong.	T	--
	U	--
24. Receive award	T	T,TJ
	U	ISFP,F,SF
*25. Unpleasant day-dreams do not bother me.	T	--
	U	--
26. Fear meeting new responsibilities.	T	--
	U	--
27. Imagine getting revenge.	T	ISTP,IP
	U	ISFJ
28. Accepted in successful organization.	T	ISTJ,T*,ST*,TJ*
	U	F*,FP
29. Feel guilty to escape punishment.	T	--
	U	ESTJ
30. Never panic from daydreaming.	T	--
	U	--
31. Interested in what I'm doing.	T	INTJ,ENTP,T*,ST*, NT*,TJ*,TP
	U	ENFP,ESFJ,F*,SF*, FP*,FJ
32. My thoughts wander.	T	INFP,N*,P*,IP*,NP*, FP,IN
	U	ESFJ,S*,J*,SJ*,FJ*, ES

Item	True (T) or Untrue (U)	Totals
*33. My mind seldom wanders from work.	T	ESTJ,S*,J*,EJ,ST*, SJ*,TJ*,ES*
	U	INTP*,ENFP,N*,P*,IP, NF*,NT,NP*,FP,EN
34. Lose interest easily.	T	ISTP,P*,IP*
	U	J*,EJ*,SJ,FJ
*35. Not easily distracted.	T	ISTJ,ESTJ*,S*,T*,J*, EJ,ST*,SJ*,TJ*,ES*
	U	INFP,ENFP*,N*,F*,P*, IP*,NF*,NP*,FP*
36. Concentration not impaired by talk nearby.	T	T
	U	F
37. Unrelated thoughts creep into work.	T	--
	U	--
38. Can work at task a long time.	T	ESTJ,J*
	U	P*,IP
39. Facing a tedious job, notice other things.	T	INFP,P*,IP,NP,FP
	U	J*,NJ,FJ
40. Get bored easily.	T	INFP*,ISFP*,I,F,P*, IP*,SP,FP*,FJ*,IN
	U	ESFJ,E,T,J*,EJ*,SJ*, TJ*,ES
41. Hard to read with phone talk nearby.	T	N,NP
	U	S,SF*,SJ,FJ*
*42. Seldom bored.	T	ESFJ,ENFJ,J*,EJ*, SJ*,FJ*
	U	P*,IP*,SP*,FP

Item	True (T) or Untrue (U)	Totals
43. Hard to concentrate with TV or radio on.	T	--
	U	--
*44. Thoughts seldom drift.	T	J*,SJ
	U	P*,IP,NP,FP
45. Difficulty concentrating.	T	ISTP,I,P*,IP*,SP, FP
	U	E,J*,SJ,TJ

Note: All MBTI reports at $p = .01$, except *$p = .001$.

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BIOGRAPHICAL SKETCH

Born in Baltimore, Maryland, in 1947, the author graduated in 1965 from the Holton-Arms School in Washington, D.C. She attended Rollins College, University of North Carolina, and Boston University before graduating from the University of Florida in 1969 with the Bachelor of Arts in psychology. In 1974 she received the Specialist in Education from the University of Florida.

For the next several years the author traveled extensively in Europe and learned to speak the German language. She worked in the psychosomatic division of a psychiatric clinic in Germany and completed German training programs in psychodrama, Gestalt therapy, and guided affective imagery.

Special professional interests of the author include couple counseling, the psychology of pair relationships, and Jungian dream analysis. She makes her home with Dr. Gerd Wartenberg, a philosopher, in Goettingen, Germany, where she works in a private practice in psychotherapy.

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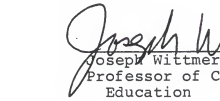

Joseph Wittmer, Chairman
Professor of Counselor
Education

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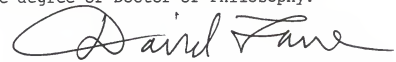

David Lane
Professor of Counselor
Education

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

Mary McCaulley
Assistant Professor of
Clinical Psychology

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December 1985

David C Smith (N)
Dean, College of Education

Dean, Graduate School